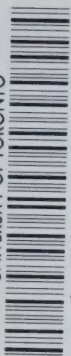


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Vol.46 No.1

Canadian
Dental Association

January
1980

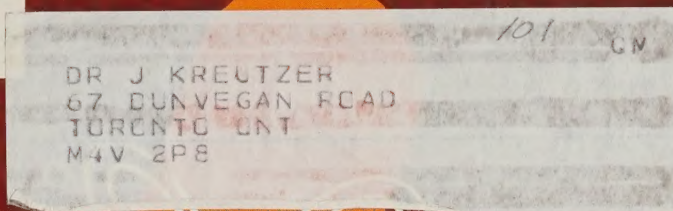
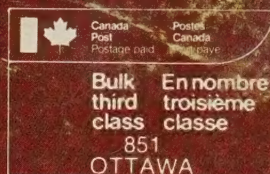
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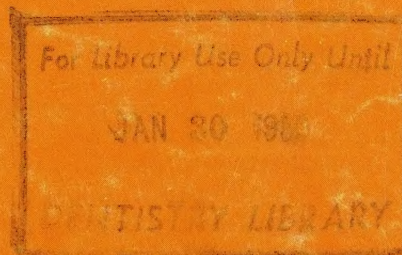


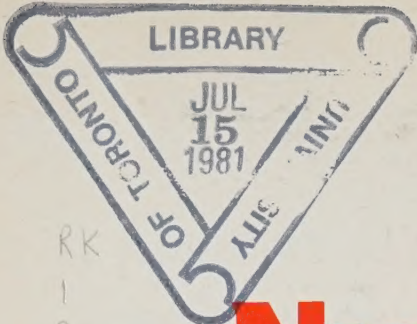
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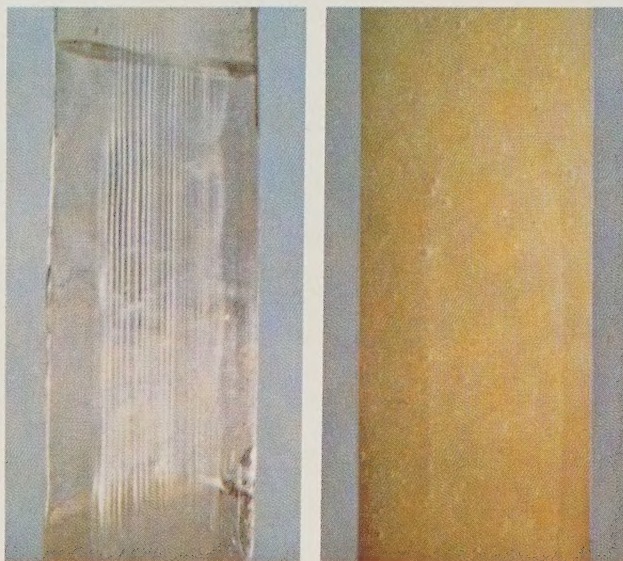


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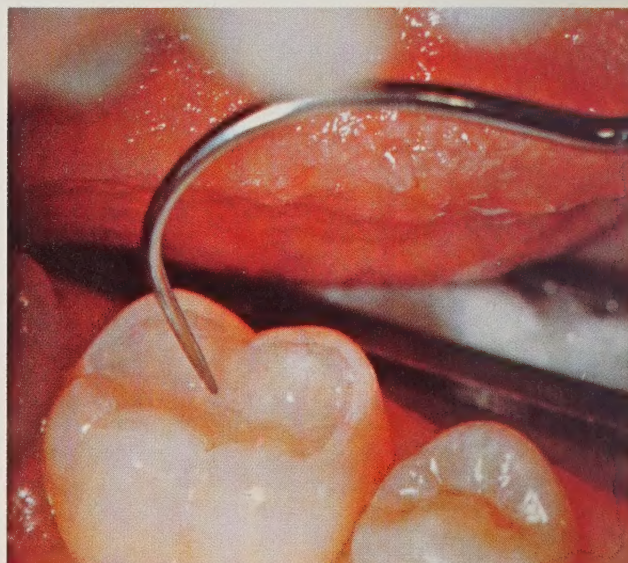


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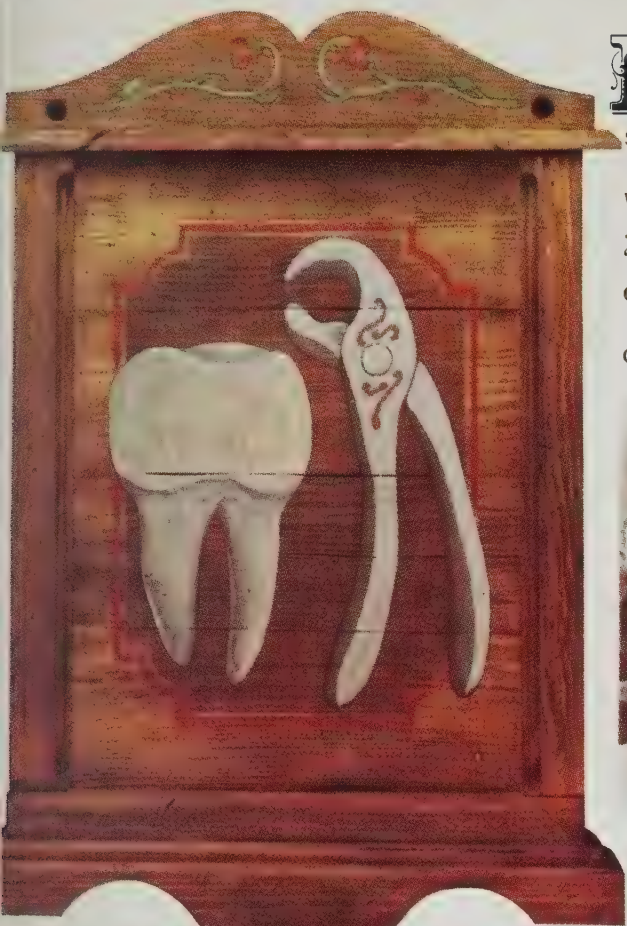


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If you were practising dentistry 100 years ago, you probably had another trade as well—anything from blacksmith to travelling salesman. Because you couldn't make a living just as a dentist.

But dentistry was changing; and if you were serious about your work you were beginning to recognize the merits of preventive dentistry ...which meant teaching the public that dentistry was more than "pulling the tooth that hurts." It was about this time that the Colgate company introduced Colgate toothpaste.

As people learned that keeping teeth healthy required day-to-day care, they learned to care for them with Colgate.



By the turn of the century most dentists were no longer common tradesmen, but educated professionals; and the Canadian Dental Association was founded so they could share their skill, their knowledge and their concern for the integrity of the profession. Although more and more toothpastes were now being introduced, Colgate's reputation as an effective dentifrice was already well-established. More and more dentists were recommending Colgate to their patients.



As the century progressed, many biological and technical advances were made in the field of dentistry, one of the most significant of which was the increasing use of fluoride to reduce the incidence of cavities. The first fluorides to be used by dentists were simple in composition: sodium fluoride and stannous fluoride. But the Colgate company was developing its own improved fluoride, MFP (sodium monofluorophosphate). Research showed that this fluoride reacts with the tooth enamel to form fluorapatite*, which makes the tooth more resistant to decay. Tests also showed that staining of teeth, which can be a problem with stannous fluoride, isn't a problem with MFP. Reformulated Colgate with MFP was so effective that it was one of the first toothpastes to receive official recognition from the Canadian Dental Association†. And Colgate** with MFP is still one of the most effective toothpastes in the fight against cavities today.



*Ericsson, Y., The mechanism of the monofluorophosphate action on hydroxy apatite and dental enamel, Acta Odont, Scand., 21, 341-358 (1963).

† Colgate Toothpaste contains sodium monofluorophosphate, which is, in our opinion, an effective decay preventive agent, and is of significant value when used in a conscientiously applied program of oral hygiene and regular professional care.

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Editorial

623 The future of our profession: Unity

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14 Hall Commission

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14 Societies

Society and association news in Canada.

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11 Veterans' Dutch Reunion

A gathering of World War II vets is planned for this summer. It's a "thank you" gesture from Holland.

12 Faculty News

The history of McGill University's Faculty of Dentistry has been published.



12 Ottawa Update CDA's lobby against Bill C-17 gains support.

12 Continuing Education Dalhousie co sponsors its first french continuing education course in Edmundston, New Brunswick. The lecturer is Dr. Leon Lemian, assistant pro- fessor, University of Montreal.

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Notice of change of address should be received before the 10th of the month, to become effective the following month.

Subscriptions: North American subscribers — \$28 (Canadian funds) per year; all other countries \$30 (Canadian funds). No discount for booksellers or agencies.

Subscriptions are payable to January 1. New subscribers should not remit until billed.

U.S. representatives: Medical Media Wm. McCausland, Ed. Goedeke, Box 101, NJ 08071. Phone: 609-589-5454.

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Journal

de l'Association
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Éditorial

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"L'un des principaux défis qui se dressent devant l'avenir de notre profession est celui de préserver notre unité," dit Dr Clyde Covit, président de l'ADC. "L'enjeu, c'est l'avenir de notre profession. Rien de moins."

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Dr John Stamm

- 16 **Bill C-17**
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- 16 Voyage à Hollande

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[†]Beiswanger, B.B., et al.: J. Dent. Child. 45:137, 1978



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Although there are many fluoride dentifrices, only **Crest** has proven efficacy in combination with office fluoride treatments.

THE FUTURE OF OUR PROFESSION: UNITY

As we enter a new decade, it is time for the dentists of Canada to take the initiative in facing the demands of another era. One of our greatest challenges in the future of our profession is the challenge of unity. We live in a changing world — and change does not always reflect progress. Dentistry as we know it today is threatened by misguided crusaders from the outside and, too often, by apathy within our ranks. The future of our profession is at stake. Nothing less.

Are you willing to fight for and defend your profession as it exists now or are you going to stand silently by ready to accept a new form of "professionalism" that looms ahead and can be systematically imposed on us?

I am not talking about denying progress that comes with these changing times. I am talking about speaking out against fundamental alterations that, ultimately, have the power to destroy our profession.

If you are willing to fight, you must also be willing to actively promote unity within dentistry across Canada. Only by this positive individual action will the collective voice of our profession be heard.

Our cause is good quality health care. The continuing honor of our profession demands that we stand up and protect the integrity of that cause. Nothing must be allowed to interfere with the profession — not government nor any other structured institution. Nothing must be allowed to interfere with each and every Canadian citizen's right to the best quality health care possible. The integrity of our profession is rooted soundly in the belief that our patients' well-being comes first and only a unified profession can protect that goal.

In the vanguard of the future of dentistry in this country is the Canadian Dental Association. It is a viable, vigorous and responsive organization, able and willing to speak on behalf of every dentist in Canada.

Members of the Executive of the Canadian Dental Association, its Board of Governors and its Committees and Councils will continue to apply their expertise to any decision relating to our profession so that the interests of dentists are strongly represented.

But the hub of the wheel cannot function without the spokes. You must assist us in this work. You are the strength of our lobby across the country. You must represent the Canadian Dental Association locally and carry the message of professionalism and unity to your federal and provincial Members of Parliament and to the public.

As president of your national Association, I look to you, my colleagues, individually and collectively, for help and support, for cooperation and faith.

To those few dentists in Ontario and Quebec who have not yet joined the Canadian Dental Association for 1980, I ask you to do so. Professionalism as it exists today demands a unified commitment from all dentists in Canada — from coast to coast.

Clyde Covit, DDS,
President,
Canadian Dental Association.

L'AVENIR DE LA PROFESSION: UNIFICATION

Au moment où s'amorce une nouvelle décennie, il est temps que les dentistes canadiens prennent l'initiative de faire face aux exigences d'une ère nouvelle. L'un des principaux défis qui se dressent devant l'avenir de notre profession est celui de préserver notre unité. Notre monde est en constante évolution, et cette évolution ne se manifeste pas toujours sous la forme de progrès. Notre profession se voit menacée par les interventions malencontreuses d'autres secteurs et, trop souvent, par l'apathie qui se glisse dans nos rangs. L'enjeu, c'est l'avenir de notre profession. Rien de moins.

Êtes-vous prêts à vous battre pour préserver le statut actuel de notre profession ou allez-vous plutôt accepter sans mot dire l'apparition sournoise d'une nouvelle forme de "professionnalisme" qu'on cherche systématiquement à nous imposer?

Loin de moi l'intention de m'élever contre les progrès qu'apporte toute évolution. Ce dont je parle, ce sont les transformations fondamentales qui, éventuellement, peuvent détruire notre profession.

Si vous êtes disposés à lutter, vous devez aussi être prêts à assumer un rôle actif promouvoir l'unité au sein de la dentisterie au Canada. C'est uniquement par cette intervention individuelle vigoureuse que la voix collective de notre profession se fera entendre.

La cause à laquelle nous nous consacrons est d'offrir de bons soins de santé. Le maintien de l'honneur de notre profession exige que nous ayons le courage de protéger l'intégrité de cette cause. Aucune intervention, qu'elle soit gouvernemental ou qu'elle provienne d'une autre institution structurée, ne doit entraver l'exercice de notre profession. Rien, non plus, ne doit entraver le droit de chaque Canadien à profiter des meilleurs soins possibles. L'intégrité de notre profession est fondée sur notre conviction que le bien du patient passe avant tout; seule une profession unifiée peut garantir la réalisation de cet objectif.

L'avenir de la dentisterie au Canada dépend du travail de pionnier de l'Association Dentaire Canadienne. C'est un organisme viable, vigoureux et adaptable, qui est en même temps apte et disposé à servir de porte-parole à tous les dentistes canadiens.

Les membres de l'Exécutif de l'Association Dentaire Canadienne, de son Conseil d'administration, de ses comités et conseils continueront à exercer leur compétence et leur vigilance afin que toute décision affectant notre profession soit prise en tenant pleinement compte des intérêts des dentistes.

Nos efforts ne porteront fruit que si nous bénéficions de votre plein appui. C'est vous qui faites sentir votre présence dans tous les coins du pays. Vous devez donc représenter l'Association Dentaire Canadienne à l'échelon de votre localité et de votre région et transmettre notre message de professionnalisme et d'unité à vos députés fédéral et provincial, ainsi qu'au public.

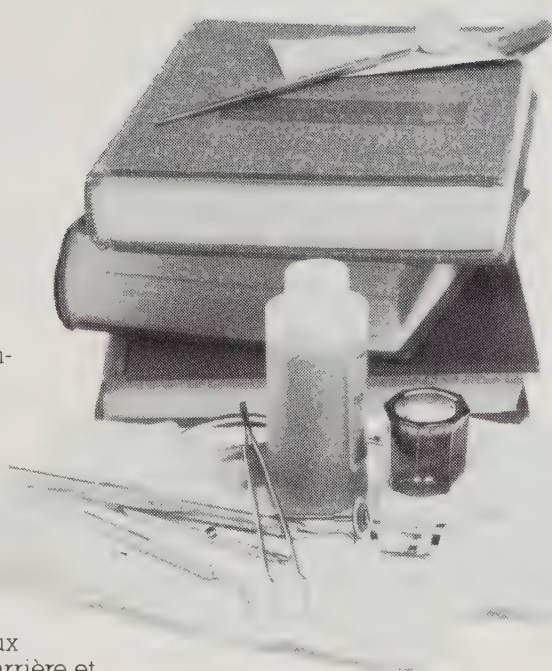
À titre de président de votre collaboration et votre confiance.

Je demande également aux quelques dentistes du Québec et de l'Ontario, qui ne se sont pas encore joints à l'Association Dentaire Canadienne pour l'année 1980, de le faire sans tarder. La professionnalisme auquel nous aspirons exige l'engagement de tous les dentistes du Canada, d'un océan à l'autre.

Clyde Covit, D.D.S.
Président
Association Dentaire Canadienne

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Letters

Either/or, not both

I wish to commend you for the quality of our journal and the high standards you are maintaining. However, since no one is perfect may I be permitted one very small criticism?

I note for instance on page 533 of the October copy of the journal that there is an article authored by Philip Sapp. I notice that he is listed as Dr. J. Philip Sapp, D.D.S., M.S. I believe it is considered redundant and poor form to use both the prefix "Dr." and the suffix designation D.D.S. I notice this guilting of the lily all too often in the letterhead and correspondence, etc. of young graduates who are overly impressed with their recent academic achievement. I hope that

this does not represent the C.D.A. standard and that once more I can point to it as the demonstrated authority in this area.

Dr. W.H. Feasby
University of Western Ontario

Demand for explanation

During the last few years many independent dental suppliers and manufacturers have been absorbed by multinational conglomerates. As a result of this we are, in effect, being held up to ransom by a cartel (even the most naive of us must wonder why the materials we use cost virtually the same whatever name they bear).

The Canadian and American Dental Associations between them

also represent a cartel. I strongly urge that we hire an expert to obtain and test materials available from manufacturers still outside the conglomerates.

If you do not believe that we are being overcharged I suggest you consider the history of one product, dispersalloy. In the early 70's silver was about \$2.00 and dispersalloy was \$6.00. This would imply the the cost of manufacture, distribution and profits was about \$4.00 per ounce.

Silver is now approximately \$18.00 per ounce and dispersalloy is \$46.00 an ounce. It is obvious that the manufacturing costs of alloy have not risen from \$4.00 to \$28.00 per ounce in six years. If they have, perhaps the manufacturers can explain why.

Dr. T. Webb,
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CFDE fellowship increased

Dr. James Guest, Chairman of the Board, recently announced the Canadian Fund for Dental Education's 1980 fellowship for an existent dental teacher will be increased by \$500 to \$2,000. The fellowship is sponsored by Warner-Lambert Canada Limited.

The purpose of the award is to provide established teachers in one of the ten Canadian faculties of dentistry with the opportunity to extend their knowledge in any field of dental education and research.

Candidates must be full-time members of the teaching staff of a school of dentistry and have a minimum of five years University teach-

ing experience. Preference is given to applicants who are not supported by sabbatical salary or other grants.

The proposed program of study must be well defined and be of at least three months duration. Applications will be received by CFDE until March 1 and must include a

Teacher training applications

Applications are being accepted for CFDE teacher/researcher training fellowships for the 1980/81 academic year.

In order to qualify for the fellowships from the Canadian Fund for Dental Education, candidates must be Canadian citizens or landed immigrants and have completed an undergraduate course in dentistry, dental hygiene or a program in science and be eligible for admission to a graduate school.

Applicants must also declare their intention to become a teacher and/or researcher in a Canadian faculty of dentistry or school of dental hygiene. Preference will be given to those who will return to full time teaching or research with a minimum commitment of two days a week.

A fellowship recipient is obligated to give a year's full time service for each year of full fellowship support or a year of half time service for each year of half fellowship support. When teaching commitments are not fulfilled, fellowship awards must be repaid in full.

The CFDE full fellowship is awarded to applicants who have either a legal or a strong decanal commitment for full time employment after training. The CFDE half fellowship is designed for applicants who have either a legal or a strong decanal commitment for half time employment after training or to applicants who are enrolled in a basic science program.

Each fellowship is for one year of study at the graduate level and may be renewed.

curriculum vitae and a letter of support from the applicant's dean or other senior university official.

Full information on the CFDE fellowship is available from the Fund's office: 44 Eglinton Avenue West, Suite 205, Toronto, Ontario M4R 1A1.

ADA testing

The American Dental Association has reached a tentative agreement with the sponsor of the recently legislated "truth in testing" law of New York State.

According to the terms of the agreement, ADA will continue to administer the Dental Admission Test (DAT) in New York if an amendment to the new law is accepted and the manual dexterity portion of DAT is exempted from the disclosure requirements of the legislation.

ADA had indicated in July (see CDA Journal, vol 45, no. 9) that it could no longer administer DAT in New York because of the disclosure requirements ADA was concerned that the perceptual ability test (PAT) component of DAT would be jeopardized by disclosure.

New York State Senator Kenneth LaValle has agreed to introduce legislation to amend the testing law to exempt PAT and if the amendment is passed, ADA will administer DAT as scheduled in April of this year.

The perceptual ability test is composed of non-verbal, perceptual and space relation tests which measure student dexterity related to the technical skill of dentistry. Due to the nature of the test, the number of test forms is severely limited and ADA had indicated disclosure requirements would force discontinuing this test component.

Veterans' Dutch reunion

A Dutch welcome has been extended to Canadian veterans of the World War II liberation of Holland. Ceremonies celebrating the 35th Anniversary of the event are planned for this spring and a national committee headed by MGen Chris Vokes has been set up to organize a return visit of Canadians to Holland. Honorary members of the committee include Prime Minister Joe Clark and Premiers of the Canadian provinces.

The trip is scheduled for April 29 to May 10.

Celebration activities will focus on the city of Nimegen and Canadians are invited to stay in private homes — a "thank you" gesture from the Dutch.

Full details are available by writing to: "We do remember," 335 Bay Street, Suite 1105, Toronto, Ontario M5H 2R3.

In the News



Dr. Mervyn Rogers, left presenting history book to Dr. Kenneth Bentley.

McGill University . . . At the request of the Faculty of Dentistry, Dr. Mervyn Rogers has recorded the history of the school in honor of the 75th Anniversary of its founding. The book chronicles early events relating to dentistry and dental education in eastern Canada. Advance orders are being filled. Write to 3640 University Street, Room M/72, Montreal, Quebec, H3A 2B2.

Ottawa Update

Since last month's report on the Canadian Dental Association's objections to the federal government's proposed Bill C-17, the matter has been raised in the House of Commons, and CDA's concerns (see Journal, December, 1979) have been fully recorded.

A revised edition of CDA's original brief to the Senate Committee on Banking, Trade and Commerce, first presented at the time of the previous government's Bill C-37, has been submitted and the Association is currently awaiting further comment.

CDA has most recently received the support of the Canadian Institute of Chartered Accountants.

Continuing Education

Dalhousie University . . . Dr. Leon Lemian is conducting a course "Potpourri Endodontics", January 26 in Edmundston, New Brunswick. The program is sponsored by the Continuing Education in Dentistry Department at Dalhousie and the New Brunswick Dental Society. Dr. Lemian is assistant professor, Université de Montréal. This course is the first Dalhousie University has presented in French. For more information contact Dr. Mike Horsman at (506) 532-2494 or Dalhousie University (902) 424-2277.

University of British Columbia . . . February 2, Mandibular Dysfunction for the Dental Practitioner, with Dr. George Zarb. **February 9**, Hepatitis Control, Sterilization Practices for the Dental Office — Prevention of Infection of You and Your Patients, with Dr. Richard Parker. For further information, contact the Continuing Education in the Health Sciences, Continuing Dental Education, Instructional Resources Centre, Vancouver, British Columbia V6T 1W5.

FLUORINSE*

Sodium fluoride rinse

Composition: Contains sodium fluoride in a pleasantly flavoured neutral pH liquid. Contains alcohol (3% by volume).

Indications: Dental caries prophylactic.

Precautions: Limited to topical use in the mouth only. DO NOT SWALLOW. Excessive ingestion may cause nausea and excessive use may cause dental fluorosis.

Contraindications: Sodium-free diets.

Dosage and Administration: 1 to 2 teaspoons (5 to 10 ml) of Fluorinse is swished around vigorously in the mouth for approximately 1 minute and then expectorated. Recommended at bedtime, after brushing and flossing teeth thoroughly. For maximum benefit, patient should not eat or drink for a period of 30 minutes after rinsing.

How supplied: Fluorinse is available in 455 ml plastic bottles with child-resistant caps.

Weekly Rinse	Daily Rinse	Weekly Rinse
Cinnamon (red) 0.2% sodium fluoride	Ice Mint (blue) 0.05% sodium fluoride	Mint (green) 0.2% sodium fluoride

Caution: Keep out of reach of children.

FLOZENGES*

Sodium fluoride lozenges

Composition: Contains sodium fluoride in lozenge form. Contains no sugar, saccharin or cyclamate.

Indications: To help protect against dental caries, particularly for children through age 14.

Precautions: If this product is used in an area where the drinking water has a natural fluorine content in excess of 0.7 parts of fluoride ion per million parts of water, or is artificially fluoridated, fluorosis of the tooth enamel may result.

Contraindications: Sodium-free diets.

Dosage and Administration: FOR CHILDREN OVER 3 YEARS OF AGE: 1 lozenge daily, preferably at bedtime after brushing and flossing teeth thoroughly. Flozenge is slowly sucked and dissolved in the mouth. FOR CHILDREN 2 TO 3 YEARS OF AGE: 1 lozenge every other day, as above.

Fluoride in drinking water	Recommended supplement	
	Children 2-3	Children 3 & over
0-0.3 ppm	0.5 mg	1.0 mg
0.3-0.7 ppm	0.25 mg	0.5 mg

How supplied: Flozenges are available in plastic, child-resistant containers of 120 lozenges.

Two flavours:	Orange	Strawberry
	0.5 mg of fluoride ion	1.0 mg. of fluoride ion

Caution: Keep out of reach of children. Exceeding recommended dosage over a prolonged period of time may be harmful.

References

- † According to the International Workshop on Fluorides and Dental Caries Reductions, School of Dentistry, University of Maryland, 1974; "...concentration of recommendable rinsing solutions ranges from 0.025% to 0.2%." (Page 140). Many available rinses do not meet this standard.
1. Confirmed by world-wide dental authorities (International Workshop, Maryland, 1974).
2. Stephen KW. Campbell D: Caries reduction and cost benefit after 3 years of sucking fluoride tablets daily at school. *Brit. dent. J.* April 1978, 144-202.

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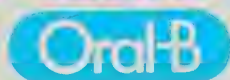
Fluorinse is available in 0.2% Cinnamon (red) for weekly use; 0.05% Ice Mint (blue) for daily use; and 0.2% Mint (green) for weekly use.

For children who do not like to rinse, Flozenges are a good alternative.

Flozenges are pleasant to take, and effectively reduce the incidence of caries.² They are available in two flavours: Orange (0.5 mg. of fluoride ion) and Strawberry (1 mg of fluoride ion).

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Health review

Following its recent mandate from CDA's Executive Council, the Management Committee is currently preparing a brief to be tabled before the Hall Commission into the status of publicly-financed health insurance programs in Canada. Members of Management Committee include Dr. Clyde Covit, president of the Canadian Dental Association, Dr. Gil Utas, president-elect and Dr. Rod Moran, past president.

Dr. John Stamm, associate professor and chairman, Department of Community Dentistry, McGill University, will be working on the submission.

Commission hearings are scheduled to take place during the week of February 18 in Ottawa.

In a recent memorandum to Corporate Members, Licencing Bodies, the Board of Governors and CDA's Executive Council, Dr. Covit outlined the background to the Hall Commission.

On September 17 last year, Health

and Welfare Minister David Crombie presented his proposal for a full-scale review of the status of publicly-financed health insurance programs in this country. At that time, Mr. Crombie indicated the review would be conducted by Chief Justice Emmett Hall, author of the Hall Commission Report on which federal medicare legislation is based.

The Hall Commission will consider the extent to which the goals of the "Charter of Health for Canadians," proposed by the Royal Commission of Health Services, are being achieved. It will also look at how well the principles of portability, reasonable access, universal coverage, comprehensive coverage, public administration, reasonable compensation and uniform terms and conditions are implemented.

The current Hall Commission will also consider revisions to the federal Hospital Insurance and Diagnostic Services Act, Medical Care Act and related legislation and ways public authorities have to meet the principles of the "Charter of Health for Canadians."

On November 22 last year, CDA spokesmen met with a Commission representative. At that time, items of specific interest to the Commission were outlined. These focussed on universal, comprehensive and elective health care, privately and publicly-funded programs and statistics on existing delivery systems.

Other areas, including mechanisms of payment, reasonable access, importance of prevention, new procedures and technology, dental education, dental research and manpower requirements (numbers and distribution of dentists and the role of para-professionals) will also be studied.

CDA will finally present the Commission with information relating to the need for a substantive arm within government to assist in the development of policy in consultation with the dental profession.

Societies/ Sociétés

London and District Dental Society . . . Executive Committee members are Dr. F. Mader, past president; Dr. W.C. Reid, president; Dr. D. Beaton, vice president; Dr. D. Goodbrand, secretary; Dr. A. Goldfarb, treasurer. Upcoming events for 1980 include meetings on February 21 featuring Dr. Ian Scofield, Department of Oral Medicine, Division of Oral Surgery, University of Western Ontario who will speak on "Common Oral Surgery Procedures" and March 27 featuring Dr. Robert Moyers from Ann Arbor, Michigan who give an orthodontic presentation.

Canadian Dental Hygienists' Association . . . newly appointed specialty contributor to the Journal of the Canadian Dental Association is Dale Scanlan of Ottawa, Ontario.

College of Dental Surgeons of Saskatchewan . . . reports that because of inquiries received from insurance companies concerning rubber stamp signatures or auxiliary staff signing dental claim forms, the College has approved the motion that "the treating dentist must sign each and every dental claim form and therefore rubber signature stamps or the signature of a subordinate in lieu of the dentist's signature is not acceptable."

Ontario Dental Hygienists' Association . . . Executive Council includes Pat Webb, president; Judy Barnes, president elect; Anne Bosy, past president; Peggy Bakti, secretary; and Judi Rogers, treasurer.

FDI President

More than 6,000 dentists from around the world met for the FDI 67th World Dental Congress in Paris late last year.

Dr. Louis J. Baume of Switzerland was installed as FDI president at the end of the meeting. A professor of dentistry at Geneva's École Dentaire, Dr. Baume will serve a two year term as FDI's chief executive officer.

Dr. Clyde Covit, president of the Canadian Dental Association and Dr. Rod Moran, past president were CDA's representatives at the FDI meeting.

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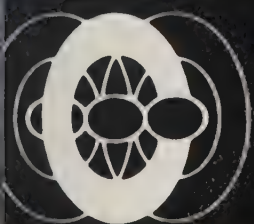
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La Commission Hall

À la suite du mandat qu'ils s'est vu confier récemment par le Conseil exécutif de l'ADC, le Comité de gestion travaille actuellement à la préparation d'un mémoire qui sera soumis à la Commission Hall, chargée d'étudier la situation des régimes publics d'assurance-maladie au Canada. Les membres du Comité de gestion comprennent le Dr Clyde Covit, président de

l'Association Dentaire Canadienne, le Dr Gil Utas, président élu, et le Dr Rod Moran, président sortant.

Le Dr John Stamm, professeur associé et président du Département de dentisterie communautaire à l'Université McGill, participera également à la rédaction du mémoire.

Les audiences de la Commission devraient avoir lieu au cours de la semaine du 18 février, à Ottawa.

Le Dr Covit a exposé l'histoire de la Commission Hall dans un mémorandum qu'il a envoyé récemment aux membres corporatifs, aux organismes de licence, au Conseil d'administration et au Conseil exécutif de l'ADC.

Le 17 septembre 1979, le ministre de la Santé et du Bien-être, M. David Crombie, a soumis un projet d'examen complet des programmes publics d'assurance-maladie au Canada. M. Crombie a alors précisé que l'examen se ferait sous la direction du juge en chef Emmett Hall, auteur du rapport de la Commission Hall qui a donné naissance à la législation fédérale en matière d'assurance-maladie.

La Commission Hall s'efforcera de déterminer dans quelle mesure se réalisent les objectifs de la "Charte de santé des Canadiens", mise de l'avant par la Commission royale d'enquête sur les services de santé. Elle étudiera le degré d'application des principes de transférabilité, d'accès raisonnable, de protection universelle et complète, d'administration publique, d'indemnisation raisonnable et d'uniformité des conditions.

La Commission déterminera également les révisions qui s'imposent à la Loi sur l'assurance-hospitalisation et les services diagnostiques, à la Loi sur les services médicaux et aux lois connexes; elle verra aussi à identifier les moyens à la disposition des autorités pour se conformer aux principes de la "Charte de santé des Canadiens".

Le 22 novembre 1979, les porte-parole de l'ADC ont rencontré un représentant de la Commission. Il en est ressorti une liste des sujets d'un intérêt particulier pour la Commission: soins de santé universels, facultatifs et complets, programmes publics et privés, statistiques sur les mécanismes actuels régissant les soins de santé.

La Commission étudiera également d'autres secteurs, dont les modes de paiement, l'accès raisonnable, l'importance de la prévention, les nouveaux procédés et les innovations technologiques, l'éducation dentaire, la recherche dentaire et les besoins en matière d'effectifs (nombre et répartition des dentistes, rôle des paraprofessionnels).

Enfin, l'ADC procurera à la Commission des données quant au besoin d'instituer, au sein du gouvernement, un organisme responsable d'aide à l'élaboration des politiques, en consultation avec la profession dentaire.

Les audiences régionales devraient avoir lieu le 4 mars à Halifax, le 10 mars à Toronto, et à des dates subséquentes à Saskatoon et Vancouver.

Bill C-17

Depuis le mois dernier, alors que nous signalions à nos lecteurs l'opposition de l'Association Dentaire Canadienne au Bill C-17 du gouvernement fédéral, la question a été soulevée à la Chambre des communes: les préoccupations de l'ADC (voir le numéro de décembre 1979 du Journal) ont été entièrement prises en note.

L'Association a soumis une version révisée de son mémoire original au Comité du Sénat sur les affaires bancaires et le commerce, mémoire présenté en réponse au Bill C-37 du gouvernement précédent. Nous attendons maintenant de recevoir des commentaires à ce sujet.

Bonne nouvelle: l'Institut canadien des comptables agréés a promis son appui à l'ADC sur cette question.

Voyage à Hollande

Les Hollandais seront heureux d'accueillir chaudement les anciens combattants canadiens qui ont participé à la libération de la Hollande pendant la Deuxième Guerre mondiale. Des cérémonies pour commémorer le 35^e anniversaire de cet événement auront lieu au printemps et un comité national, sous la direction du major général Chris Wokes, a été mis sur pied pour organiser la visite des Canadiens en Hollande. Les membres honoraires du comité comprennent le Premier Ministre du Canada, M. Joe Clark, ainsi que les premiers ministres provinciaux.

Le voyage est prévu du 29 avril au 10 mai.

Les cérémonies et les événements commémoratifs auront surtout lieu dans la ville de Nîmegen, où les Canadiens seront invités à demeurer dans les foyers des habitants de la localité, qui manifesteront ainsi leur reconnaissance envers les anciens combattants canadiens.

Les intéressés peuvent obtenir des renseignements plus complets en écrivant à: "We do remember", 335 Bay Street, Suite 1105, Toronto, Ontario M5H 2R3.

Bourse de formation des enseignants

Les candidats aux bourses de formation des enseignants/chercheurs du FCED pour l'année 1980-1981 peuvent à compter de maintenant envoyer leur demande.

Pour être admissible à une bourse de perfectionnement du Fonds Canadien pour l'Éducation Dentaire, tout candidat doit être citoyen canadien ou immigrant reçu, et doit avoir terminé un cours au niveau du baccalauréat en dentisterie, en hygiène dentaire ou en science, remplissant ainsi les conditions d'admissibilité à une école de diplômés.

Les candidats doivent aussi s'engager à devenir enseignant ou chercheur dans une faculté de dentisterie ou dans une école d'hygiène

dentaire au Canada. On accordera la préférence à ceux qui consacreront au moins deux jours par semaine à l'enseignement ou à la recherche.

Le bénéficiaire d'une bourse doit consacrer une année de service à plein temps pour chaque année de bourse d'aide totale, ou une année de service à mi-temps pour chaque année de demi-bourse. Les bénéficiaires qui ne remplissent pas leurs engagements à l'égard de l'enseignement doivent rembourser au complet les octrois reçus.

La bourse complète du FCED est octroyée aux candidats qui se sont engagés, soit de façon légale ou envers le doyen, à occuper un poste

à plein temps après leur formation. La demi-bourse du FCED est prévue pour les candidats qui se sont engagés, soit de façon légale ou envers le doyen, à occuper un poste à mi-temps après leur formation ou pour les candidats qui sont inscrits à un programme de sciences fondamentales.

Les bourses s'appliquent à une année d'étude au niveau gradué et peuvent être renouvelées.

La valeur des bourses est déterminée chaque année par le Comité consultatif sur le choix des bourses et par le Conseil fiduciaire du Fonds Canadien pour l'Éducation Dentaire.

On peut se procurer les formulaires de demande et des renseignements additionnels en s'adressant aux facultés canadiennes de dentisterie ou au FCED, 44 Eglinton Avenue West, Suite 205, Toronto, Ontario M4R 1A1.

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Book Reviews

J.M. Dunning

Principles of Dental Public Health

3rd edition
Harvard University Press, 1979

This is the third and enlarged edition of this book by Dr. Dunning, who is professor emeritus of ecological dentistry at Harvard University and a leader in the field of dental public health. Previous editions have enjoyed considerable and deserved success in what, it must be admitted, is a small market. The book is intended for students and general practitioners of dentistry and as an outline for teachers of dental public health to both undergraduate and graduate students. The breadth of this stated target audience in combination with the many topics which come under the purview of dental public health create some of the book's strengths as well as its weaknesses. While it is convenient to have information about so many subjects available in one publication, it is difficult to strike a balance between the comprehensiveness required by the graduate student for some topics and the appropriately more superficial needs of the casual reader interested in a review of the field. Readers will find, however, that the strengths outweigh the weaknesses.

The book's 24 chapters are organized into four sections: background; the tools of dental public health; dental public health programs; and the future.

The early chapters provide interesting perspectives about the meaning and early history of (dental) public health. Early work on the epidemiology of dental disease, in which Dunning was very active, are well described and interesting, although more updating might be anticipated by the serious dental epidemiologist. The new chapter on dental care quality evaluation is useful and welcome, as is the updating of the payment and dental care delivery chapters. Much has happened in these areas since the last edition in 1970. The Canadian reader should be forewarned that much of the new material on public dental care programs refers to U.S. legislation and programs, such as the dental component of Medicaid. In the discussion of foreign and international programs the exclusion of Canada's medicare and early children's denticare experience is curious since what happens here would seem to be most closely relevant to the United States than some of the foreign material discussed.

Perhaps as a sacrifice to the need to cover so many topics fairly completely, rather than a few comprehensively, the chapters on preventive dentistry and biostatistics are rather superficially treated. Also, the water fluoridation chapter does not review the recent alleged causative association between water fluoridation and human cancer, although papers and data refuting any such relationship were published prior to preparation of this edition. Other available texts, of course, are dedicated to each of these topics, and Dunning urges that these be studied.

But the foregoing criticisms unfairly reflect on the overall quality of the book which is good and contains a wealth of information for a wide variety of dental readers interested in community dental

problems and developments, and public policy issues. Interesting new insights on various dental matters abound. For example, the chapter on the payment for dental care mentions the Utah dental prepayment experience of the early 1970's when just five of 6,000 subscribers utilized plaque control as an insured benefit and a Connecticut insurance carrier's twelve percent reduction in dental insurance premiums for children benefitting from water fluoridation. Dunning also reminds us that the R.V.U. system for fee determination used in both Canada and the U.S.A., for all its virtues, does not consider the perceived value of the service to the patient or its true value in terms of disease prevention and control for the patient. Perhaps factors other than the technical and chairtime ones now used should be incorporated into fee-setting.

This latest edition of Dunning's book is long — 655 pages. It is, however, a good reference book for the dental student and dentist interested in any or all of the topics of concern to the public's dental health. As well, the dental public health specialist will find it a good review of these same topics, especially when supplemented (as required) with the readings recommended at the end of each chapter.

"Principles of Dental Public Health" was reviewed by Dr. Donald Lewis, professor University of Toronto, and the Journal Specialty Contributor in Public Health.

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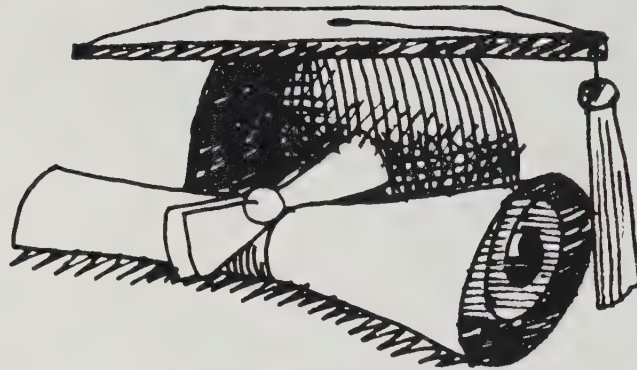
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Some indicators of **Oral health status** of the North American child population

J.W. Stamm, D.D.S., D.D.P.H., M.Sc.D., F.R.C.D.(C)
Montreal, Quebec

The epidemiological approach which relies on experts' determinations of health status will be used in this paper.

Since virtually all overview presentations relying on empirical findings are data driven, it is useful to examine

LA SANTÉ BUCCALE DES ENFANTS NORD-AMÉRICAINS

Le présent exposé s'appuie sur l'approche épidémiologique fondée sur les données d'experts quant à l'état de santé. Étant donné que presque tous les exposés d'ensemble basés sur des découvertes empiriques s'inspirent de certaines données, il est utile d'examiner brièvement les sources des données utilisées dans la préparation de cette analyse, affirme le Dr John Stamm, président du département de dentisterie communautaire, à l'Université McGill, de Montréal. Comment pourrait-on comparer la santé buccale des enfants nord-américains par rapport à celle des pays occidentaux développés? Trois constatations s'imposent. Premièrement, la fréquence de la carie dentaire chez les enfants nord-américains est plus faible que chez les enfants d'âge semblable dans d'autres pays développés; on pourrait attribuer ce fait à l'utilisation répandue du fluorure au Canada et aux États-Unis. Deuxièmement, on remarque que les enfants nord-américains ont moins de dents cariées et manquantes (faillite du traitement) que les enfants d'âge comparable dans d'autres pays, sauf peut-être en Nouvelle-Zélande. Enfin, la fréquence des maladies périodentaires semble être plus faible chez les enfants nord-américains que chez les populations d'âge semblable sur lesquelles on possède des données.

briefly the data sources used in preparing this analysis. As far as Canada is concerned, no reliable national study exists which provides a range of Canadian estimates for children's periodontal disease, dental caries experience, tooth loss rates, malocclusions, etc. While it is true that the Dental Health Survey of Canadian Provinces 1969-70¹ and the Nutrition Canada Dental Survey 1970-72² results have been published, both surveys were sufficiently compromised during the implementation and data analysis phases so as to make the results either unreliable or not useable. Instead, dental indices applicable to Canadian children must be estimated from surveys carried out in five of the ten provinces. These provinces are British Columbia, Alberta, Manitoba, Ontario and Quebec which fortuitously constitute 86.2 percent of the total Canadian population according to the 1976 census. The dental data from four of these provinces (Alberta,³ Manitoba,⁴ Ontario,⁵ and Quebec⁶) are reasonably well standardized insofar as the surveys were conducted since 1976, used examiners calibrated either directly or indirectly by Dr. D. Barmes of the World Health Organization (in three of the four surveys; Manitoba was the exception), and in three of the four surveys examined over 2,000 children (Manitoba was the exception). The British Columbia data are derived from a 1968-74 dental survey of over 3,000 children carried out by the B.C. Division of Dental Health Services.⁷ Finally, additional information concerning Ontario children has been obtained from the biannual provincial printouts of dental health indices.⁸

The sources for the American data are generally better known and, particularly in the case of government documents, are of a high standard. The bulk of children's dental indices come from the U.S. Health Examination Surveys of 1963 to 1965 for 6 to 11 year old children, and 1966 for 12 to 17 year old youths. The findings from these

surveys have been published^{9,14} in a series of monographs.

A second source of American data stems from the 1975 Baltimore replication¹⁵ of the ICSDMS.¹⁶ While this is a particular study from which it is not easy to generalize, it does possess the advantage of comparability with some Canadian studies (and provides continuity with Dr. Barmes' presentation). A third supply of dental caries indices originates from the 1973-74 baseline studies undertaken for 14 independent fluoride mouth-rinse projects which formed part of the NIDR's Community Caries Prevention Demonstration Program.¹⁷ A fourth set of dental data comes from a survey of nutritional status of preschool children in the United States, 1969-70.¹⁸

DENTAL CONDITIONS REQUIRING IMMEDIATE ATTENTION

When establishing the oral health indicators of a population of children, one of the first tasks is to measure the proportion of children suffering from oral pain, to estimate what proportion of children might suffer pain in the near future and, by subtraction, determine what proportion of children are free from conditions requiring immediate attention. (Immediate attention may be defined as treatment required within 30 days.)

Table 1 presents such data for 13 and 14 year old children from three recent Canadian surveys. It can be seen that in both Manitoba and Alberta over 95 per cent are not in need of immediate dental treatment. Further, in both these provinces toothaches were found with a frequency of fewer than one in every 300 children. Pulpally involved teeth and other lesions likely to cause pain occurred in 3.5 to 4.6 per cent of the children. The Quebec situation is generally less favorable, a conclusion which will recur in later parts of this paper. Finally, it should be noted these dental surveys were conducted without radiographs so that caution must be exercised in interpreting the figures for pulpally involved teeth.

Table 1 Classification of Dental conditions requiring immediate attention in 13-14 year olds			
	Percent		
Condition	Quebec N=1,093	Manitoba N=300	Alberta N=1,302
None	72.9	96.2	95.3
Relief from Pain	6.7	.3	.1
Pulpally Involved Teeth	18.3	—	2.7
Lesions Likely to Cause Pain	2.1	3.5	1.9

DENTOFACIAL ANOMALIES AND OCCLUSION

Four North American dental surveys, using the criteria and standards set out in the survey manual developed for the ICSDMS, have collected data on dentofacial anomalies in 13-14 year old school children. To date, data from three of these studies have been analyzed and selected findings are presented in Table 2. Results show anomalies relating to dentition occurred infrequently, supernumerary teeth being seen in 1.0 per cent or fewer children, malformed teeth in approximately 1.5 per cent of subjects and impacted teeth in 2.0 per cent or fewer cases. With regard to adequate space for the teeth in both the maxilla and mandible, there is a discernible pattern in spite of some variation in the prevalence estimates. Just as the Alberta and Ontario studies found a higher prevalence of crowding, so the Baltimore study determined the highest prevalence of spacing. Undoubtedly, the reason for this is the higher proportion of black children in the Baltimore study. As has been observed in other American investigations, black children suffer from noticeably less crowding than do their white counterparts.^{14,17} In the same vein, a diastema of 2 mm or greater was determined more frequently in the Baltimore investigation.

Turning to a consideration of occlusion, it is evident from Table 3 that very few of the estimates are consistent across any specific occlusal condition. The question is, are these real differences or, do the data reveal differences in applying diagnostic criteria among examining teams? Based on the collective experience of the epidemiologists involved, it appears examiner variation is a major problem.¹⁵ Results such as those in Table 3 raise a question about the training required to accomplish occlusal assessments in the dental survey setting.

Table 2 Distribution of Dentofacial Anomalies in 3 Populations of North American 13-14 year old children			
	Percent Occurrence		
Condition	Baltimore N=1,041	Alberta N=1,302	Ontario N=936
Dentition			
Supernumerary	0.0	0.1	1.0
Malformed	1.7	1.6	1.5
Impacted	0.6	1.2	2.0
Space			
Crowding	22.9	34.5	28.1
Spacing	20.0	12.9	17.6
Ant. Irregularity	34.4	17.8	30.2
Diastema	20.8	5.7	14.1

PERIODONTAL DISEASE

Although it is a major dental disease, the accurate measurement of periodontal disease is problematical. Relatively high inter-examiner and inter-study variability may be expected. Consequently, not only is the comparison of periodontal disease indices obtained by various North American studies risky, the aggregation of the available data into an overall North American estimate may be foolhardy.

This dilemma is well demonstrated by **Figure 1**, a histogram showing Russell's periodontal index as assessed in five different North American child populations.¹⁹ While there need not be great concern about the range of the mean scores, what is very disturbing is that the results are highly contradictory in the face of the simultaneously established oral hygiene levels (results not shown here). The highest average periodontal index score of 0.65 appears for Alberta, the population for which the lowest mean oral hygiene index was determined. Similarly, although the mean periodontal index in the Baltimore study is twice as high as that for Ontario, the oral hygiene levels for the two populations were determined as being equivalent.

In terms of demographic variables, the data from **Table 4** indicate that among groups of North American 13 and 14 year olds, the difference in periodontal disease between males and females is very slight but, nevertheless, consistently lower in females as would be expected from an examination of oral hygiene data. It may be noted that in spite of differences in oral hygiene (not shown), in none of these studies was this disparity between males and females sufficient to bring about a difference, even as small as 0.1, in the periodontal index.

Periodontal Disease in Selected North American 13-14 Year Olds

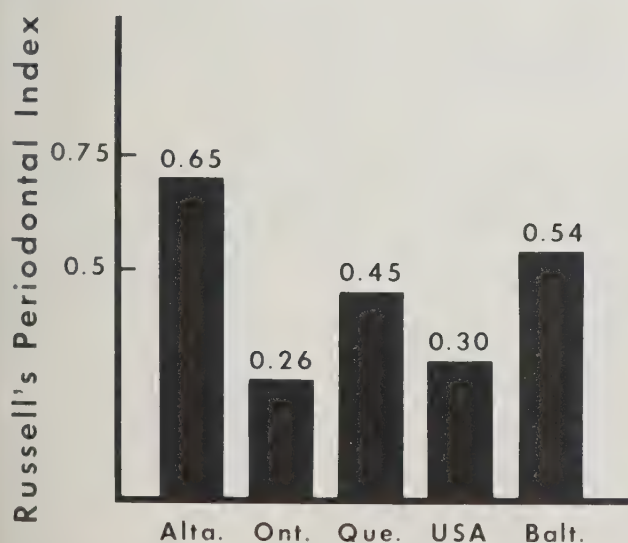


FIGURE 1

The comparison of possible racial influence on the extent of periodontal disease in a child population is depicted in **Table 5**. Once again the results are far from definitive. Whereas the U.S. 1966-70 health examination survey indicated a difference in the periodontal index

Table 3
Assessment of Occlusion of the Teeth in
13-14 year old North American Children

Occlusal Condition	Percent Occurrence			
	Baltimore N=1,041	Alberta N=1,302	Ontario N=936	USA ^a N=6,757
Posterior Openbite	12.5	1.5	5.2	—
Posterior Crossbite	9.1	9.0	19.4	17.1
Overjet	7.9	7.1	15.1	8.0
Overbite	19.3	9.9	16.3	27.3
Midline Deviation	26.1	14.6	21.5	—
Soft Tissue Impinge't.	9.6	5.5	3.3	—
Anteroposterior Molar Relationship	23.6	15.8	35.7	46.5

^a From U.S. Health Examination Survey 1966-70. Sample consists of 12-17 year olds.

Table 4
Periodontal Disease in Selected
North American 13-14 year olds

	Mean Russell PI Score			
	N	Male	Female	Combined
Alberta	1,249	.69	.60	.65
Ontario	936	.30	.23	.26
Quebec	1,091	.50	.41	.45
USA	2,412	.31	.29	.30
Baltimore	1,041	.58	.50	.54

Table 5
Periodontal Disease in Nonwhite and White
13-14 year old Americans

	N	Mean Russell PI Score		
		Nonwhite	White	Combined
USA	2,412 ^a	.42	.28	.30
Baltimore	1,041 ^b	.57	.53	.54

^a 14.0% of sample was nonwhite.

^b 33.6% of sample was nonwhite.

of 0.14 between whites and non-whites, a smaller difference was obtained by the analogous comparison in the 1975 Baltimore study. It should be noted that in both investigations the oral hygiene, and particularly the calculus scores, were significantly higher in the non-white groups.

Before leaving this relatively short treatment of periodontal disease in North American children, it is worthwhile to see if a better perspective of the problem can be gleaned by examining data other than the average periodontal index scores. **Table 6** attempts to do this although not without raising further analytical problems. In four of the five studies cited, genuine periodontal disease is a relatively rare occurrence.¹⁹ (For a child population, periodontitis is epidemiologically defined as an individual Russell index of over 1.5.²⁰) This is an important result marred only by the exception of the 1966-70 U.S. health examination survey. The fact that the U.S. survey generated close to the lowest mean periodontal index score among 13-14 year olds (0.30 versus 0.26 for Ontario) but finds the highest prevalence of periodontitis is somewhat disconcerting. It is mainly for this reason that the data from the fourth study in **Table 6** ought to be viewed with some skepticism. A second finding made amply clear in **Table 6** is that the most prevalent periodontal disease problem in 13-14 year old children is marginal gingivitis. In three of the five studies shown, marginal gingivitis was present in 95 per cent of the children. Finally, it appears that a relatively low proportion of children is free of all forms of periodontal disease. In terms of a general perspective then, one might say that in 13-14 year old North American children a reversible marginal gingivitis is very prevalent, while serious periodontal disease occurs only rarely.

DENTAL CARIES

Dental caries remains the major dental disease affecting North American children of all ages.²⁰ By implication, this requires that one examine the epidemiology of dental caries in somewhat greater detail in order to obtain a full understanding of the problem. Therefore, the

Table 6 Distribution of Periodontal Disease Severity Among North American 13-14 year olds				
	Percent of Children			
	N	Periodontitis	Marginal Gingivitis	No Gingivitis
Alberta	1,249	2.8	95.9	1.3
Ontario	936	0.1	79.4	20.5
Quebec	1,091	0.4	94.6	5.0
USA	2,412	5.8	62.1	32.1
Baltimore	1,041	0.0	98.0	2.0

epidemiological pattern of tooth decay will be discussed separately for the deciduous and the permanent dentitions, and for each, some evaluation of treatment levels will be attempted.

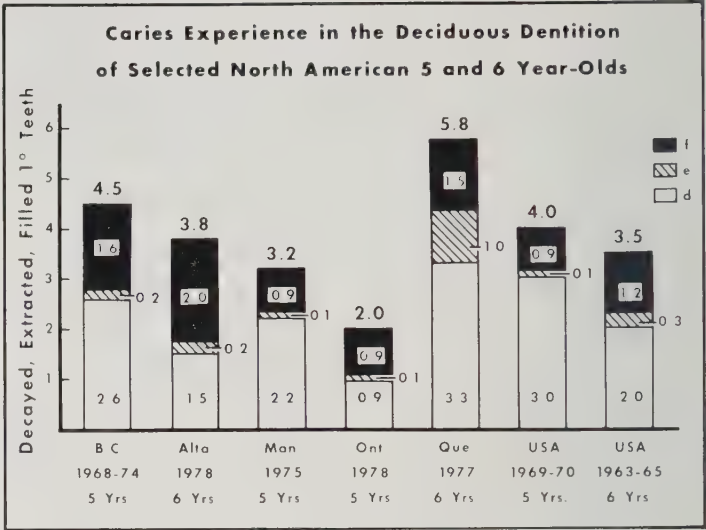


FIGURE 2

The Deciduous Dentition — A full analysis of caries experience in the deciduous dentition of North American children is of course beyond the scope of this review. The small amount of data to be presented on this subject is merely to give a general impression of the caries condition which one might expect to find in the average North American child as he is about to enter kindergarten or grade one. **Figure 2** draws on a number of diverse surveys to pull together data for a relatively current estimate of caries experience in primary teeth. Before discussing the findings one should be aware that acceptable sampling protocol was followed for all studies summarized in **Figure 2**, and sample sizes ranged between 247 and 936 subjects with the exception of Ontario where 46,949 children were examined. The Canadian findings themselves indicate a striking heterogeneity in caries experience according to geographic region. The overall decayed, extracted and filled teeth scores range from a low of 2.0 in Ontario to a high of 5.8 in Quebec. British Columbia, the province with the

Table 7 Comparison of Caries Experience by Socio-economic Group in the Deciduous Dentition of 6-7 year old School Children — An example from Quebec						
Blisshen Group	N	1° Teeth	Mean Index			
			d	e	f	deft
1	47	15.1	1.5	0.1	1.8	3.3
2	154	14.9	2.3	0.7	2.1	5.1
3	91	14.6	2.4	0.8	2.1	5.3
4	47	13.5	2.8	1.3	1.9	6.0
5	317	13.9	3.5	1.4	1.4	6.3
6	182	13.6	4.0	1.8	1.1	6.9
7	207	13.5	4.4	1.4	0.9	6.8

most favourable dentist to population ratio but, along with Quebec, with among the lowest proportion of its population consuming fluoridated water (11.6 per cent in 1976²¹) has the second highest overall deft index as determined in a survey some years ago. The U.S. deft scores of 3.5 and 4.0 may be somewhat out of date but are based on carefully generated samples of children. It should be noted that in the 1963-65 U.S. health examination survey, the extracted deciduous tooth component included teeth that were removed as well as those thought to be in need of extraction, thus inflating the estimate somewhat. It is apparent from the data that premature loss of primary teeth is becoming a relatively modest problem in North America except in certain regions. What should be of more general concern is the fact that the proportion of f/deft, with the exception of Alberta, nowhere attains 50 per cent suggesting that there is still a residual attitude among parents that the health of their children's primary dentition is not particularly important.

It is widely believed that the socio-economic environment in which a child is raised will affect the caries experience in the deciduous dentition. The generally observed pattern is well illustrated in **Table 7** which uses recent data from Quebec as an example. The deft of the top SES group is 3.3 with successively lower ranking groups demonstrating steadily increasing levels of caries experience with only the slightest reversal in the case of the lowest group. It is equally demonstrative to examine the individual d, e, and f components. Thus the average number of frankly decaying teeth is 2 to 3 times greater in the lowest SES category than in the group with the highest socio-economic standing. The trend in prematurely missing deciduous teeth is equally apparent.

Table 8 Comparison of Caries Experience in the Deciduous Dentition of Black and White American Elementary School Children							
		Age Group	Mean Number of Teeth				
			N	d	e	f	deft
Infante and Owen 1969-70	Black	5	42	4.57	.05	.50	5.12
	White	5	205	2.73	.05	.94	3.73
				Mean No. of Surfaces			
				d	e	f	defs
Heifetz <i>et al</i> 1972	Black	6-7	138	12.07	1.38	0.43	13.88
	White	6-7	230	8.43	2.33	2.67	13.41

Up to the past decade, most American dental surveys seemed to indicate that dental caries experience among black, U.S. school-aged children was lower than in their counterparts.^{9,22,23} This observation also appeared valid for the deciduous dentition.³⁷ However, more recent investigations have not confirmed the earlier findings and some have even indicated that the caries experience in the deciduous dentition is now higher for black than for white children.^{18,25,26} **Table 8** illustrates the current situation in North America with regard to potential differences in deciduous tooth caries experience between black and white children at five to seven years of age. The two studies chosen indicate that primary tooth caries levels may either be higher among black children¹⁸ or roughly equivalent in both blacks and whites.²⁷ Moreover, both studies demonstrate that black children have a greater number of frankly decaying deciduous teeth and a significantly smaller number of filled teeth in relation to their white counterparts.

The Permanent Dentition — Although dental caries in the permanent dentition has been the object of countless investigations, one still finds it difficult to succinctly yet briefly summarize the current situation as it pertains to the child population in North America. In surveying the recent literature as well as some of the older classics, one is struck by the considerable heterogeneity in reported caries levels and thus the futility of aggregating such data into single estimates. **Table 9** shows the Decayed, Missing and Filled Teeth index in several populations of seven year old North American children. One should first observe the considerable variability in the DMFT scores, the British Columbia figure being fully three times greater than the comparable U.S. score. Second, rather than every child or every second child having one or two decayed permanent teeth, it should be realized that at age seven years the majority of children will demonstrate no caries in their permanent teeth while a minority of children will account for the bulk of the observed lesions. To some degree, therefore, an average DMFT score is misleading, particularly in a population of this age. A third point to be made is that when most of the caries is bound

Table 9 Caries Experience in the Permanent Dentition of Selected North American 7 year olds					
	N	D	M	F	DMFT
British Columbia (1968-74)	1,068	1.1	0.0	0.4	1.5
Alberta (1978)	300	0.5	0.0	0.2	0.7
Quebec (1977)	735	1.0	0.0	0.2	1.2
USA (1963-65)	1,238	0.2	0.0	0.2	0.5

to be of the pit and fissure type, as it is in a population of seven year olds, differing diagnostic standards employed by examiners can have a considerable influence on the reported DMFT levels.

By the age of nine years, the dental caries level has naturally increased as **Table 10** shows. In examining these data one should observe the continued variation in mean DMFT scores. Second, in all but one of these studies the filled tooth component accounts for approximately one-half of the total DMFT score. Third, the very low caries level in Baltimore might be explained in part by the fact that the city introduced water fluoridation in 1952.

Table 11 presents a comprehensive summary of dental caries data in relation to the 13 year old population

Table 10 Caries Experience in the Permanent Dentition of Selected North American 9 year olds					
	N	D	M	F	DMFT
British Columbia (1968-74)	1,762	1.5	0.1	1.4	3.0
Manitoba (1975)	300	1.8	0.0	0.7	2.5
Ontario (1977)	1,124 ^a	0.7	0.1	0.8	1.5
USA (1966-70)	1,182	0.6	0.1	0.8	1.4 ^c
Baltimore (1975)	1,089 ^{a,b}	0.3	0.0	0.4	0.7

^a Sample contains 8-9 year olds.
^b Baltimore fluoridated since 1952.
^c Rounding error.

Table 11 Caries Experience in the Permanent Dentition of Selected North American 13 year olds					
	N	D	M	F	DMFT
British Columbia (1968-1974)	1,850	3.0	0.4	4.1	7.5
Alberta (1978)	905	1.2	0.2	3.3	4.7
Manitoba (1976)	300	2.8	0.2	2.4	5.4
Ontario (1977)	936 ^a	1.2	0.2	3.0	4.4
Quebec (1977)	496	4.9	1.4	2.2	8.5
USA (1966-70)	1,207	1.5	0.5	2.8	4.7 ^c
Baltimore (1975)	1,041 ^{a,b}	0.9	0.1	2.0	2.9 ^c

^a Sample contains 13-14 year olds.
^b Baltimore fluoridated since 1952.
^c Rounding error.

of North America. Attention should be drawn to the fact that all but two of these surveys were conducted since 1975, hence the data are fairly current. The study samples were quite large thereby providing reasonable precision for these estimates. Dental examiners from four of these studies, Alberta, Ontario, Quebec and Baltimore, were either directly or indirectly calibrated to the caries criteria and standards employed in the WHO/USPHS International Collaborative Study of Dental Manpower Systems in Relation to Oral Health Status.

In terms of the findings themselves, one might begin by noting the large range of DMFT scores — from a low of 2.9 for Baltimore to a high of 8.5 for the province of Quebec. For the sake of exactness, one should be aware that relative to the other studies, the Ontario and Baltimore results are upward biased since the findings were not reported for 13 year olds. Rather, by being based on 13 and 14 year olds combined, these two studies represent a slightly older population than the other five surveys.

To obtain some perception of the typical DMFT level

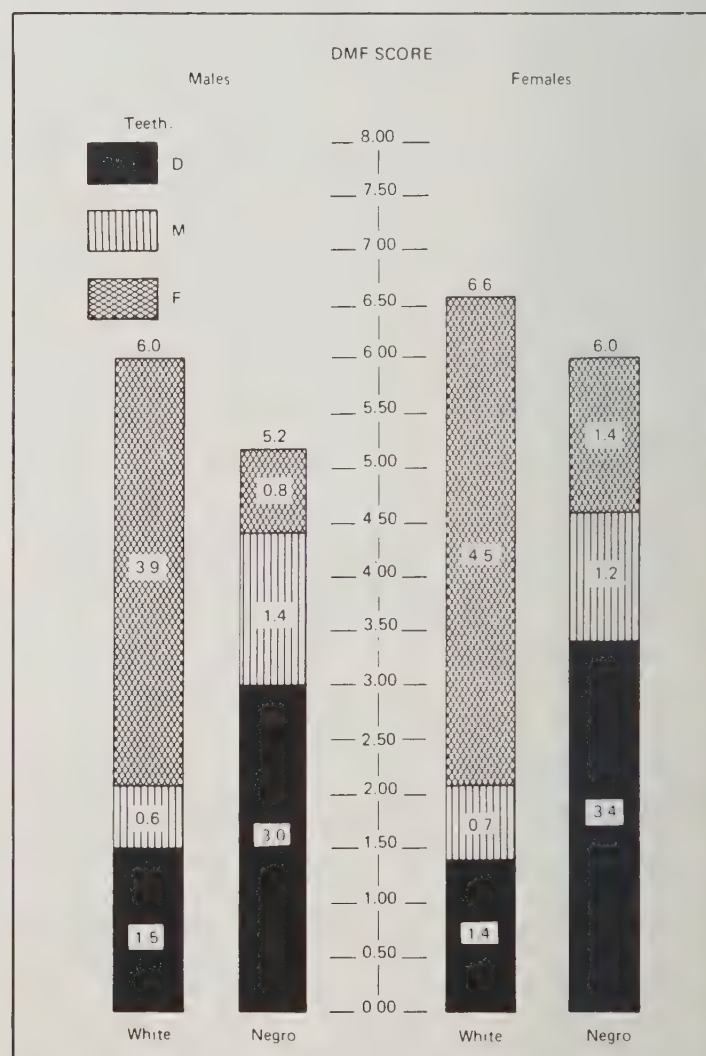


Figure 3: Average number of decayed (D), missing (M), and filled (F) teeth and average number of DMF components per person among youths 12-17 years, by sex and race: United States, 1966-70. (Source: ref. 10)

in North American 13 year olds, one ought to underline that four of the seven surveys reported a mean DMFT level in the relatively precise range of 4.4 to 5.4.

Concerning the tooth loss rates, it is apparent from these data that permanent tooth loss is a grave problem among the 13 year old population in the province of Quebec. While there may be other regions of North America where tooth loss is equally alarming, for the moment no data exist to either confirm or deny this. Turning to the mean tooth loss rate for U.S. 13 year olds, one should be aware that the reported figure of 0.5 includes teeth designated for extraction, something not included in the equivalent data from the other six surveys. This would result in a slight upward bias for the U.S. result. A missing tooth index of 0.4 for the province of British Columbia is probably in line with the relatively high DMFT of 7.5. For the remaining four studies the average missing tooth component is 0.2 or lower.

Consistent with the earlier discussion of caries experience in the deciduous dentition of black and white American children, it would appear that the lower DMFT levels enjoyed by black children in earlier decades may be giving way to a situation in which caries attack is roughly equivalent in white and black youths. Unfortunately, the present data are contradictory. **Figure 3** shows the average number of decayed, missing and filled teeth in American 12 to 17 year olds categorized by sex and race.¹⁰ These data, collected between 1966 and 1970 and representing a sample of 6,757 subjects, appear to show black children still have a lower decay rate in the permanent dentition than do white children. This finding was confirmed by the Baltimore survey. However, one ought to be cautious about such an interpretation. It may be seen that for both males and females, the white-black difference in the DMFT scores is only 0.8

and 0.6 respectively. If the large discrepancy in the number of filled teeth is noted, the real possibility arises that the DMFT for white children is upward biased by the placement of preventive fillings. Furthermore, since untreated interproximal decay is more difficult to detect than on interproximal filling, it could also be that, where radiographs are not used, caries rates for black children might be underestimated. Given this perspective and the empirical results by Bagramian and Russell²⁶ and Heifetz *et al.*,²⁷ it might be hypothesized that caries experience in permanent dentition is close to equal in black and white North American children.

The impact of family socio-economic standing on the caries experience in the permanent dentition is frequently discussed. Although not all analyses come to the same conclusion, it does appear that education rather than income may be the major determining SES factor influencing the occurrence of this disease. In the health care field generally, the primacy of education over income as a determinant of health status, at least in North America, has been most consistently advanced by Fuchs²⁸ and Grossman.²⁹ In the dental field, moreover, the situation may be somewhat similar. For example, in the 1976 Manitoba dental survey, the partial regression coefficient of DMFT on father's occupation was not significant whereas the partial of DMFT on parental education was significant.⁴ **Table 12** presents the findings from Hunt *et al.*'s Ontario survey.⁵ It demonstrates that the DMFT levels are lower among children whose parents have obtained the most schooling. More dramatically, as seen in **Table 12**, untreated decay is much less common in the children where at least one parent completed college as opposed to those children neither of whose parents finished high school. The F/DMFT ratio provides further evidence of this trend.

A frequently heard remark is that the dental health status of rural children is poorer than that of urban children. While this may be generally correct, two comments should be made about the DMFT levels in rural and urban areas. First, the magnitude of the difference may often be less than might be supposed. As the Canadian data in **Table 13** indicate, only in Manitoba is the

Table 12

Influence of Parental Education on Caries Indices in 13-14 year old schoolchildren — an example from Ontario

Education of Parents	N	DMFT	Decayed	F/DMFT %
Neither completed High School	362	4.47	1.28	61.7
One completed High School	157	4.75	1.48	62.7
Both completed High School	129	3.95	0.81	68.9
One completed College	100	3.97	0.52	79.1
Both completed College	114	3.63	0.38	85.1

Table 13

Comparison of Caries Experience in 13-14 year olds living in Urban and Rural Environments: 1976-78

			DMFT Mean		
	Age Group	N	Urban	Rural	Difference
Quebec	13-14	1,093	8.5	10.3	p<0.01
Ontario	13-14	936	4.0	5.0	p<0.01
Manitoba	13	300	4.5	6.7	p<0.05
Alberta	13-14	1,302	4.9	5.1	NS

difference in DMFT between urban and rural areas greater than two teeth, and this could be the result of the distribution of water fluoridation in that province. Second, there are regions where urban-rural differences in DMFT levels are not statistically different as the Alberta³ data indicate and as was found in the Baltimore study.¹⁵ Lack of an urban-rural difference in oral health status has also been documented in another recent American study.³⁰ Third potential urban-rural differences in DMFT levels are properly determined only after statistical adjustment for socio-economic status, the presence of water fluoridation and possibly the availability of dental manpower. If this is not done, urban-rural differences may represent the effect of such unspecified influencing variables and not residency status *per se*. Indeed, to the extent that living in rural areas is a proxy for a number of other dental disease influencing

variables, the unique inclusion of urban-rural status into a framework for analyzing DMFT levels may result in a misspecified model.³¹

It has become increasingly clear, particularly as a result of the ICSDMS, that actual utilization of dental services appears to have a significant impact on children's dental health status, including the DMFT and its components.³² For the record, **Table 14** shows the responses given by selected North American 13-14 year old children to the question, "Did you receive dental care in the last 12 months?" The table indicates that between 60 and 75 per cent of 13-14 year olds may be expected to have seen the dentist in any 12 month period, a finding confirming that generated from insurance data.^{33,34}

The role played by service utilization on dental health status is evident from **Table 15**, although the findings may be surprising to some. First of all, recent users of dental services have a higher DMFT than non-users. Second, although the users' DMFT is higher, the decayed tooth component is dramatically lower than in non-users. Third, the missing tooth component in non-users would probably be somewhat higher if they sought the dental care they require. Fourth, the number, as well as the proportion, of filled teeth is much higher in users than in non-users. While the comparison between users and non-users for the individual decayed, missing and filled tooth components can be explained along traditional lines, the contrast in the combined DMFT scores is open to some interpretations and needs further investigation.

Any consideration of oral health status must consider the impact of treatment. **Figure 4** presents the pattern of dental caries treatment, in the form of F/DMFT ratios, for selected populations of North American 13 year olds. Before examining the figures themselves it is worth emphasizing that the F/DMFT ratio is a rather crude

Table 14 Question — "Did you receive Dental Care in the last 12 months?" 13 and 14 year old schoolchildren			
		Percent	
	N	No	Yes
Alberta (1978)	1,302	26.2	73.8
Manitoba (1976) ^a	300	37.4	62.6
Ontario (1977)	936	26.0	74.0
Quebec (1977)	1,093	40.0	60.0
Baltimore (1975)	1,041	35.3	64.7
^a 13 year olds only.			

Table 15 Caries Experience among 13 and 14 year old schoolchildren grouped by utilization of Dental Care during past 12 months — an example from Alberta					
			Index Mean		
User	N	D	M	F	DMFT
Yes	961	1.1	0.2	3.9	5.2
No	341	2.1	0.1	2.0	4.2
Total	1,302	1.3	0.2	3.4	4.9

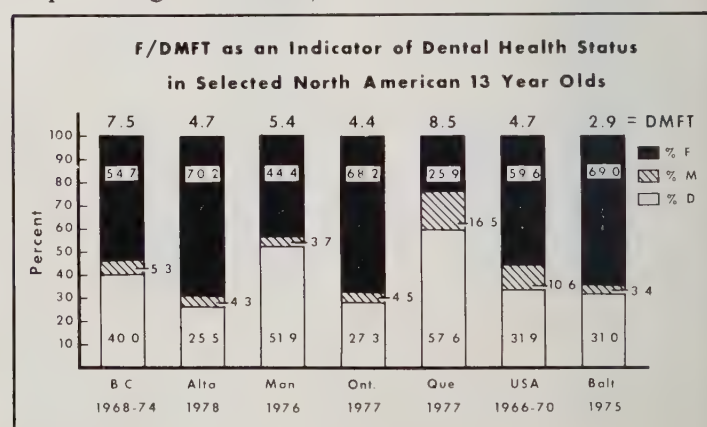


FIGURE 4

and simplistic index, and one that is easily misinterpreted. As was first pointed out by Knutson, treatment levels for dental caries should be compared in the light of the disease levels, and when these differ significantly then the comparison of treatment ratios becomes an uncertain exercise.³⁵ For example, whereas **Figure 4** gives the M/DMFT for British Columbia as only 5.3 per cent versus double this figure of 10.6 per cent for the 1966-70 U.S. health examination survey, it should be recalled from **Table 11** that the average absolute number of missing teeth was distributed in the reverse, namely 25 per cent higher in the British Columbia than in the U.S. population. The key factor is the overall DMFT score shown atop each column.

With this caution, examination of the findings shows, first of all, that the F/DMFT ratios, represented by the top portion of each column, are once again relatively heterogeneous. Three groupings appear to exist with the Baltimore, Ontario and Alberta surveys obtaining rather similar F/DMFT ratios of between 68 and 70 per cent. British Columbia, Manitoba and the 1966-70 U.S. health examination survey form the next group with treatment ratios between 45 and 60 per cent. Quebec ranks very low with an F/DMFT of 26 per cent. As far as the missing tooth component is concerned, it is interesting to note that while the 1966-70 U.S. health examination survey determined an M/DMFT ratio of 10.6 per cent, in five of the six more recent surveys this ratio hovered between 3.5 and 5.5 per cent. The upcoming American national dental survey of school children might be expected to demonstrate a missing tooth rate somewhere in this latter range.

Turning to the D/DMFT ratios, they are high in several areas (British Columbia, Manitoba, and Quebec) and more intensive preventive and treatment efforts must be undertaken. However, it should also be recognized that as long as some dental caries is expected to occur in the child population, it has been shown that a non-zero D/DMFT ratio must be present without demonstrating a failure of the dental treatment delivery system.³³ Therefore, until the prevention of dental caries incidence is complete, one should not expect a D/DMFT ratio of 0, but rather some low per centage depending on the caries attack rate and the treatment pattern in the population.

Where does the oral health status of North American children stand in relation to the "western" developed countries of the international community? Three points are evident. One, the DMFT or dental caries experience level is lower in North American children than in their comparably aged counterparts of other developed coun-

tries from which even limited data are available. This may be attributed to the widespread use of fluorides in both Canada and the United States. Two, the sum of decayed and missing (failed treatment) teeth is lower among North American children than in comparably aged populations elsewhere, possibly with the exception of those in New Zealand. Three, the extent of periodontal disease appears to be lower in North American children than in similarly aged populations on whom comparable data exist.

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Systemic fluorides an overview

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Caries continues to be the most common disease of childhood. This applies not only to Western countries but also to many developing countries, where an increasing consumption of sucrose has been accompanied by a rise in the prevalence of caries. In the last ten to 20 years in such countries, caries prevalence in 12 year old children has risen from less than 1 DMFT to between 2 and 6 DMFT¹.

Communal water fluoridation ranks with vaccination, pasteurization of milk, and chlorination of water supplies as a tremendous step forward in promoting public health. The effectiveness of controlled water fluoridation in reducing the development of caries usually by about 50

to 60 per cent in the children residing in those communities has been amply documented by many independent studies throughout the world (Table 1).²⁻⁸

Concomitant with a reduction in tooth decay is a dramatic drop in tooth mortality. For example, the number of missing first permanent molars in children aged 12 to 15 in communities with 1.0 ppm fluoride is 75 to 95 per cent less than in communities with 0.1 ppm fluoride. The consistency of all these findings among populations living under diverse environmental and cultural conditions is most impressive.

The safety of water fluoridation, when practised at about 1 ppm of fluoride, has also been carefully examined. Long-term pediatric observations of the children in Newburgh, New York have revealed no systemic effects, adverse or otherwise, except for the reduction in caries from

LES FLUORURES

Le Dr Ernest Newbrun, professeur de biologie buccale à l'Université de la Californie, San Francisco (Californie), examine les fluorures à titre de méthode de réduction de la fréquence des caries. Il compare la fluoration de l'eau potable dans les agglomérations à d'autres mesures qui ont énormément contribué à l'amélioration de la santé publique, comme la vaccination, la pasteurisation du lait et la chloration de l'eau. L'efficacité de la fluoration contrôlée de l'eau potable pour la réduction de la fréquence des caries, réduction qui s'échelonne de 50 à 60 pour cent chez les enfants, a été abondamment documentée . . . Parallèlement à la réduction de la fréquence des caries, on constate une baisse spectaculaire du nombre de dents mortes . . . les spécialistes du domaine de la santé reconnaissent de façon générale la fluoration de l'eau en tant que moyen sûr et efficace de réduire la carie dentaire.

Table 1

Percentage reduction in DMFT reported in various fluoridation studies

Study site(s)	Year of Study*	Age Group	Percent Reduction in DMFT
Evanston, Ill. ²	1946-59	12-14	49
Grand Rapids, Mich. ²	1945-59	12-14	56
Brantford/Sarnia, Ont. ²	—	12-14	57
Newburgh/Kingston, N.Y. ²	—	13-14	70
Hastings, New Zealand ³	1954-70	14-15	60
Karl-Marx-Stadt, G.D.R. ⁴	1959-72	11-15	59
Anglesey/Bangor, Wales ⁵	—	15	44
Tiel/Culemborg, The Netherlands ⁶	—	15	51
Toronto, Ont. ⁷	1964-75	11	40
Perth, Western Australia ⁸	1967-77	10	60

*Years when before-after results were obtained from study sites without a control community.

Comparison of mortality rates in fluoridated and non-fluoridated communities.

Table 2

Authors (Affiliation)	Population Compared	Location	Conclusions
Hagan et al. ⁹ 1954 (USPHS)	893,000 F 1,298,000 low F	32 pairs of cities (F > 0.7 ppm) Low F (< 0.25 ppm) in USA	No difference in mortality rates for all causes, or for cancer, heart disease, stroke, nephritis, or liver cirrhosis between F and non-F cities.
Heasman & Martin ¹⁰ (Ministry Hlth, London)	498,960 F 368,580 low F	18 F areas 18 low F areas (< 0.2 ppm) in England	Overall mortality rates same in F and control areas. Differences in certain specific causes of death between communities, but differences were conflicting. F not considered as the cause.
Nixon & Carpenter, 1974 ¹¹ (London Sch. Hyg.)	34 towns 17 F 17 non-F	England Wales	No significant correlation between fluoride content of water and mortality rates from all causes or from cancer and cardiovascular disease.
Kinlen, 1975 ¹² (Oxford University)	482,000 779,000 510,000 896,000	1 ppm F 0.5-0.99 ppm F <0.2 ppm F <0.1 ppm F England and Wales	No correlation between cancer incidence and concentration of fluoride in water.
Hoover et al. ¹³ 1976 (Nat. Cancer Institute)	53 Texas counties 36 counties F since 1954 17 counties F since 1959	Suboptimal <0.7 ppm F optimal 0.7-1.2 ppm F high 1.3-1.9 ppm F very high >2.0 ppm F 26 states in U.S.A.	No statistically significant difference in standardized mortality ratio for cancer at each fluoride level. No increase in cancer mortality detected up to 15 years after fluoridation.
Doll & Kinlen ¹⁴ (Oxford University)	11,000,000 7,000,000	10 F cities 10 non-F cities in USA	Proportion of population non-white and over 65 increased more rapidly in F cities. No effect of fluoridation on cancer mortality.
Oldham & Newell, 1977 ¹⁵ (Royal Statistical Society)	11,000,000 7,000,000	10 F cities 10 non-F cities in USA	2 groups of cities differed demographically (age-sex-race) in 1950 and even more so in 1970. No evidence that fluoride increases cancer mortality.
Newbrun, 1977 ¹⁶ (Univ. California)	706,000	San Francisco, California.	Proportion of population over 65 increased between 1950-1970. No trend in age-adjusted cancer mortality rate following water fluoridation.
Health Protection ¹⁷ Branch, 1977. (Environ. Hlth. Dir.)	79 municipalities	Canada	No differences in death rates from all types of cancer between F and non-F municipalities.
Taves, 1977 ¹⁸ (Univ. Rochester)	20 largest F cities 15 largest non-F cities	USA	No change in cancer mortality rates over 20 year period in 20 largest F cities. F and Non-F cities had different mortality rates before introduction of F.
Erickson, 1978 ¹⁹ (Center for disease Control)	16,000,000 11,000,000	24 F cities 22 non-F cities in USA	Mortality rates adjusted age, sex, race, population density and education. No difference in adjusted death rates from all causes, including cancer between F and non-F cities.
Rogot et al., 1973 ²⁰ (Nat. Heart, Lung & Blood Inst.)	71,000,000	227 F cities 187 non-F cities in USA	No difference between F and non-F cities in mortality trends from all causes or from heart disease and cancer between 1950-1970.

the use of fluoridated water. Further support for the safety of water fluoridation is based on extensive comparisons of disease and mortality statistics between fluoridated and non-fluoridated communities (Table 2).⁹⁻²⁰ Careful analyses which have considered known demographic variables such as age, sex, race, and adjusted for them have not found any differences in mortality rates from all causes or from cancer, heart disease, or other specific diseases between fluoridated and non-fluoridated communities. These conclusions are based on epidemiological studies and statistical analyses conducted independently by different investigators in several countries and have been published in reputable journals after customary peer group scientific reviews. Antifluoridationists, however, have resorted to distributing propaganda flyers or publishing in a magazine controlled by opponents of fluoridation in order to challenge the safety of communal water fluoridation. In addition to frightening the public with a baseless claim that fluoridation of the public water supply causes cancer²¹, the opponents of fluoridation have issued many misleading claims attributing birth defects, allergy, heart disease, mutagenesis, magnesium deficiency, etc. to fluorides. When subjected to thorough scientific scrutiny, these claims consistently have been proven to be unfounded²².

The safety of water fluoridation has been examined in numerous impartial judicial inquiries. Water fluoridation has been widely accepted by the health community (physicians, epidemiologists, toxicologists, and public health authorities, not just dentists) as safe and effective in decreasing dental decay. After talking a great deal of evidence, commissions in Australia^{23,24}, New Zealand²⁵,

and South Africa²⁶ have endorsed the safety and efficacy of the procedure, as did an official Canadian committee under the chairmanship of a judge of the Ontario Court of Appeal²⁷, and also the Supreme Court of the Republic of Ireland²⁸. The Royal College of Physicians of London²⁹ have found no evidence of any harmful effect from the consumption of water containing 1 ppm fluoride and have recommended fluoridation of water supplies in the United Kingdom. Similarly, a recent Governor's Commission in Minnesota concluded that the claims that fluoride is allergenic, mutagenic, or carcinogenic are not supported by the available scientific data³⁰.

Because of its effectiveness and safety, water fluoridation has been endorsed and recommended for adoption by the World Health Organization and by numerous health-related national associations of the member countries. In scientific and health circles, water fluoridation is not a "controversial" issue; it has been tested so extensively and the findings have been so convincing that a true consensus exists in support of this measure. Continued survival of the implication of controversy represents one of the major triumphs of quackery over science in our generation³¹.

In a few areas, such as Hong Kong, Kuwait, and Singapore, 100 per cent of the population are served by optimally fluoridated water supplies. Other countries have also made good progress, including Australia with 67 per cent and the U.S.A. with about 60 per cent of the population served by public supplies drinking fluoridated water. Canada, with 46 per cent of the population on potable water systems served by optimally fluoridated water supplies³², (Table 3) ranks about 9th in the world. In terms of

Table 3
Fluoridation in Canada shown by provinces — both adjusted and naturally occurring, as of December 31, 1976

Province or Territory	Systems Supplying Fluoride	Population Served	Percent of	
			Total Population	Population on Potable Water Systems
Newfoundland	4	52,335	9.3	16.1
Prince Edward Island	2	20,843	17.6	48.4
Nova Scotia	22	332,155	40.0	70.6
New Brunswick	5	88,691	13.1	24.9
Quebec	43	772,366	12.3	14.4
Ontario	122	5,155,381	62.3	72.3
Manitoba	48	667,912	65.3	84.1
Saskatchewan	113	333,496	36.2	58.2
Alberta	93	817,004	44.4	59.5
British Columbia	27	287,099	11.6	14.5
Yukon Territory	2	11,800	54.0	78.6
Northwest Territories	6	18,472	43.3	73.8
CANADA	487	8,557,554 ¹	37.2	46.4

(1) Of this total, 174,181 received naturally occurring fluoride at a concentration greater than 0.7 mg/L

actual numbers of the population, Canada, with 8.5 million served by fluoridated water, ranks 4th.

Many barriers remain to the achievement of nationwide and worldwide optimal fluoridation of community water supplies. These include apathy and ignorance on the part of the communities, lack of funds to implement fluoridation, and inadequate monitoring systems. Undoubtedly, the actions of the antifuoridationists remain as the major obstacle to communal water fluoridation. These misguided individuals constitute a small segment of society usually not more than 15 per cent, but some are extremely vociferous and, unfortunately, exert a disproportionate influence on the uncommitted and uninformed population. Regrettably, this influence often extends to elected officials at the local, state or provincial, and national level. By exploiting a public that mistrusts government and the scientific community and places a premium on individuality and freedom of choice, antifuoridationists have become increasingly well organized and powerful.

Recently *Consumer Reports*³¹ responded to "the lies and false claims that have been made" in the attack on water fluoridation. It found that, following a hearing of the House Committee on Government Operations of the U.S. Congress on the safety of water fluoridation, there was only scant coverage by the press except in publications that commonly run antifuoridation stories. The media appear, with few exceptions, more interested in the

sensational than in the scientific facts on fluoridation. Success stories make poor press. The fact that Johnny has only four fillings and has not needed to have any teeth pulled, whereas his dad at the same age had ten fillings and had already lost two permanent teeth will not make the headlines. But if Mrs. Jones alleges that she has suffered from mouth ulcers, skin eruptions, sore throat, hair loss, joint pains, headaches, nausea and tiredness since the water was fluoridated, these undocumented claims are called news. The antifuoridationists themselves are less concerned with the health effects of fluoridation than they are with the political aspects. The major issue really hinges on "freedom of choice", "mass medication," "individual rights," "forced" or "compulsory" fluoridation, *ad infinitum ad nauseam*. Somewhere behind the smokescreen of highly emotive terms, "buzz words," the rights and best interests of the children, who do not vote, are too often lost.

What can be done to extend the benefits of water fluoridation to more children? For a start we must develop a pro-fluoridation lobby to influence politicians and decision-making officials. They are responsive to pressure groups; if opponents write a hundred letters we must be able to mobilize twice or thrice that number. We must continue to educate our representatives in government as to these benefits, even when fluoridation is not a referendum issue, because by then it is often too late. We must encourage them to show positive leadership in gain-

Table 4
Communal water fluoridation cost data

Community	Population served	Capital costs (Dollars)	Amortization (Years)	Annual operating costs (Dollars)	Annual cost per capita (Cents)
San Francisco San Mateo Burlingame Hillsborough	1,100,000	200,000	50 ²	110,000	14
East Bay Municipal Utility District	1,093,000	500,000	15	168,116	18
Marin Municipal Water District	182,000	85,000	10	20,000	16
Los Angeles (projected)	2,858,000	175,000	25	205,000 ³ 410,000 ⁴	13 20

1 Data or cost estimates, 1974

2 Amortization over 50 years because major cost item was new building

3 Projected operating cost using H₂SiD₆ or Na₂SiF₆

4 Projected operating cost using NaF

Source: Water engineers from each community, personal communication, 1974

ing implementation of this recognized public health measure. Our medical colleagues also need to be kept informed more specifically as to the safety issue. It is not enough for them to know that their professional societies have endorsed fluoridation. Physicians, even more than dentists, should be able to refute the spurious and irresponsible allegations concerning health made by opponents of fluoridation. This will require inclusion of lectures on fluoridation in medical school curricula, in continuing education programs, and particularly in training programs in public health. In addition there is a need for a "hot-line" to central sources of information on fluoridation issues, such as the Dental Disease Prevention Activity, Center for Disease Control in Atlanta, the National Institute for Dental Research in Bethesda, and the Staff of the Council on Dental Health of the American Dental Association in Chicago. These offices maintain current files of all pertinent literature which are often not readily accessible to local public health officers or to physicians and dentists in private practise. We need to consult with experts in behavioural psychology, marketing techniques, and promotional advertising to find more effective methods of public persuasion.

In addition to publicising the safety and dental benefits of communal water fluoridation, the cost features ought to be widely publicised. In these days of continuously escalating health care costs, water fluoridation remains one of the few bargains. In communities of over 50,000 population, the annual cost per person — 13¢ to 18¢ varies very little (**Table 4**). The cost-effectiveness and practicality of water fluoridation have been reviewed in detail elsewhere³³. Suffice it to say that the approximate cost-benefit ratio is 1:50, that is, for each \$1 spent on fluoridation, \$50 are saved in treatment. To cost-conscious rep-

resentatives in government, this must be a persuasive argument in favor of fluoridation.

FLUORIDE SUPPLEMENTS

Communal water fluoridation is the method of choice where possible. Where it is not feasible such as in areas not served by piped water supplies, or where political opposition prevents its implementation, alternative sources of systemic fluoride must be considered. Fluoride tablets, drops, or lozenges can serve this purpose and have been shown to be effective^{34,35}. Caries reductions in deciduous teeth of approximately 50 to 80 per cent have been found when fluoride administration was begun before about two years of age and was continued for a minimum of three to four years. In permanent teeth the highest caries reductions (up to 80 per cent) have been reported in private pediatric practices, when supplementation started at birth with 0.5 mg fluoride until age 3 and continued with 1.0 mg fluoride until age 12^{36,37}.

The success of these studies could be attributed at least in part to the cooperation of the select population that visits a pediatrician regularly. Another important contributing factor is undoubtedly the enthusiasm and dedication of the pediatricians who are able to motivate their patients to use the supplements over an extended period.

Unfortunately, the findings in private pediatric practices cannot readily be translated into anticipated caries reduction when distribution of fluoride supplements is attempted on a large scale, such as in community health centers, well-baby clinics, and county health departments. Community programs in which tablets were distributed for use at home have generally been unsuccessful because of poor compliance (**Table 5**). This conclusion is based on independent reports from several countries,

Table 5
Examples of compliance rate of fluoride supplements in unsupervised programs

Community	Compliance	Reference
Bethesda, MD and Washington, DC	50% use over recommended period	Arnold et al. 1960 ³⁸
Calgary, Alberta	33% use of free F tablets after 7 mo	Dentistry in the News, 1967 ³⁹
Kohala, Hawaii	90% use initially 12% use after 4 yr	Tabrah and Eveleth, 1962 ⁴⁰
Gloucestershire, England	21% use initially 2% use after 9 mo	Smyth and Withnell, 1974 ⁴¹
Clifton, NJ	2.3% use over 7 yr	Wexler, 1968 ⁴²
South Australia	49% use 3-4 yr 32% use 4-5 yr 18% use 5-6 yr	Fanning et al, 1975 ⁴³
Essex and Hertfordshire, England	6% use after 3 yr	Silver, 1974 ⁴⁴
British Columbia, Canada	23% use after 1 yr	Richardson, 1967 ⁴⁵
Sundsvall, Sweden	5% use after 5 yr	Anderson and Grahnén, 1976 ⁴⁶

including Australia, Canada, England, Germany, Sweden, and the United States^{38,46}.

Caries reduction can be obtained by supervised fluoride supplementation in schools. In nine such studies, the overall reduction in caries in permanent teeth ranged between 20 and 35 per cent over two or more years of fluoride ingestion. The study which extended over the longest period of time, up to eight years, reported a reduction of 36 per cent in new DMFT and 47 per cent in new DMFS⁴⁷. Because children are at least 5 or 6 years old before they begin to attend school, some of their permanent teeth are already partially or fully mineralized. Therefore, maximum benefits have neither been anticipated nor found in fluoride supplementation programs in the schools. Nevertheless, the most practical approach to fluoride tablet administration in public health programs is the daily distribution of chewable tablets in schools. Such programs require little time and can be administered with minimal interruption of the school's academic program. It is imperative that participating teachers are adequately informed and properly motivated to supervise the daily distribution of the tablets. The program should begin in the earliest grades and extend to the 8th grade.

It should be emphasized that fluoride tablet administration is strictly supplemental: it is intended to increase fluoride intake to approximately the amount that would be obtained from ingestion of liquids in optimally fluoridated communities. A practical dosage schedule (Table 6) has been proposed which allows for differences in age and in fluoride concentration of the community water supplies⁴⁸, and has been accepted by the Committee on Nutri-

tion of the American Academy of Pediatrics⁴⁹. This schedule is relatively simple, and can be implemented by using either the fluoride drops or the 0.25, 0.5 and 1.0 mg fluoride tablets that are now commercially available. For infants who are unable to chew and swallow a tablet, a fluoride solution dispensed with an appropriate dropper is recommended; the supplementation should start before six months of age.

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Table 6
Supplemental fluoride dosage schedule* (in mg F/day)
According to fluoride concentration of drinking water

Age (yr)	Concentration of fluoride in water (ppm)		
	Less than 0.3	0.3 to 0.7	Greater than 0.7
Birth to 2	0.25	0	0
2-3	0.50	0.25	0
3 to 14	1.00	0.50	0

*Adjusted allowance in milligrams of fluoride per day; 2.2 mg of sodium fluoride contains 1 mg of fluoride

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Review of topical applications **Fluorides** and **Fissure sealants**

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For the past 35 years or so, the use of fluorides in various vehicles has been preeminent among measures available to prevent dental caries. Despite recent interest in other approaches to the problem of preventing dental caries, fluoride remains our best combat weapon for the disease that affects nearly everyone. During the past 15 years sealants have been used increasingly to prevent dental decay in the pits and fissures of the occlusal surfaces of posterior teeth. Used in combination, fluorides and pit and fissure sealants have the potential of greatly protecting teeth from the ravages of dental caries.

TOPICAL APPLICATIONS OF FLUORIDE

There are several ways in which fluoride may be provided in order to protect teeth from dental caries. In addition to being delivered systemically, fluoride may also be topically applied directly to erupted teeth, either by professional application by dentists or auxiliaries, or by self-application at home or at school.

PROFESSIONALLY-ADMINISTERED PROCEDURES

Evidence exists to show that professional applications of solutions of two per cent sodium fluoride (NaF) and of eight per cent stannous fluoride (SnF_2) and either solutions or gels of acidulated phosphate fluoride (APF) containing 1.23 per cent fluoride ion can inhibit the incidence of dental caries by about 40 per cent in children who reside in areas with insufficient fluoride in their drinking waters.^{1,3} Professionally-applied fluorides should therefore, be included in the caries preventive armamentarium of dental practitioners who treat children and adolescents.

Adults who demonstrate evidence of susceptibility to dental caries should also be given professional applications of fluoride.

APF has several advantages over the other agents currently available for professional application. Not only have the results of nearly all studies with the APF solution and gel been positive, but at least two studies have shown that benefits last from two to three years after applications have ceased.¹ Moreover, the agent is nonirritating to the gingiva, does not discolor hypocalcified enamel or silicate restorations, has an acceptable taste and is stable when kept in a plastic container.

The stannous ion in SnF_2 may confer additional benefits of its own by inhibiting the development of bacterial dental plaque and thus reducing the amount of acid produced by bacteria.⁴ If further research confirms these observations, stannous fluoride may have its greatest impact when incorporated in agents that are applied frequently, such as dentifrices and mouthrinses. These agents may have a beneficial effect both to the teeth and to the gingiva, if an anti-bacterial effect exists.

Data to support the continued use of topically applied fluorides in areas that have community fluoridation or for children who have received maximal exposure to systemic fluorides are limited and conflicting.¹ Topical applications of fluoride should be continued for several years after initiation of fluoridation for children whose teeth were already erupted or fully calcified when the procedure was implemented. Individual children in a fluoridated community may be highly susceptible to dental decay; they should be given professional applications of concentrated fluoride agents, as well as other forms of fluoride therapy.

However, their routine use for all children in fluoridated communities is questionable.

Some work indicates that a prophylaxis prior to topical applications of fluoride is not necessary because no measurable difference in fluoride uptake by enamel occurs regardless of whether a prior prophylaxis takes place.⁵ Clinical research is currently underway to test this hypothesis.

PROPHYLAXIS PASTES

When a topical fluoride application is not scheduled to follow a prophylaxis, a fluoride-containing prophylaxis paste should be used in an effort to replenish the fluoride that is abraded from the enamel by the mechanical procedures of the prophylaxis itself.⁶ Because collective data have not shown a consistent and marked cariostatic effect from applications of fluoride prophylaxis pastes used alone, they should not supplant topical applications of fluoride solution or gels.

Although professionally applied topical fluorides are suitable for use in private dental practice, they have disadvantages for public health programs in which preventive benefits are sought for all children in a community. The current maldistribution or unavailability of professional dental personnel and the high costs of treatment accentuate the shortcomings of professionally administered techniques as public health measures. Such procedures are expensive because they require a one-to-one relation between the provider of a preventive service and the recipient of the service.

L'UTILISATION DES FLUORURES

Depuis 35 ans, l'utilisation des fluorures incorporés à divers agents figure au nombre des principales mesures de prévention de la carie dentaire. En dépit de l'intérêt manifesté récemment à l'égard de nouvelles façons de prévenir la carie, le fluorure demeure notre principale force de frappe dans la lutte constante contre cette maladie qui n'épargne pratiquement personne. Au cours des quinze dernières années, on a recouru de plus en plus fréquemment à des produits de scellage pour prévenir la carie dans les creux et les fissures des surfaces de contact des dents postérieures. L'utilisation combinée des fluorures et des produits de scellage peut protéger grandement la dentition des ravages de la carie, selon le Dr Herschel Horowitz, chef des programmes communautaires, direction de la recherche et de la prévention des caries, Institut national de la santé (É.U.), Bethesda, État du Maryland.

SELF-APPLICATION OF FLUORIDES

In efforts to overcome these drawbacks, several methods of self-application of fluorides have been developed and evaluated. These may be subdivided into six categories: (1) Solutions or gels applied with a toothbrush; (2) Prophylaxis pastes applied with a toothbrush; (3) Gels applied in trays; (4) Dentifrices; (5) Mouthrinsing; (6) Dietary supplements (tablets or drops). Self-application may be carried out at home, either *ad libitum* or as prescribed by a dentist or physician (dietary fluoride supplements). Several of the procedures are also eminently suitable for school-based programs of dental caries prevention.

Solutions and gels applied with toothbrush

Studies of various regimens of toothbrushing with concentrated solutions or gels of fluoride about five times a year show that this method reduces dental caries by about 25 per cent.^{7,8} The procedure, however, requires large quantities of expensive supplies, necessitates supervision of participants in groups of no more than 15 and results in gigantic quantities of unhygienic waste. Moreover, the method is poorly accepted by participants. There is no proof for claims that this method of fluoride application teaches children to brush their teeth correctly and results in improved gingival health. Few such programs are being conducted in Canada and the United States.

Prophylaxis pastes

Toothbrushing with fluoride-containing prophylaxis pastes ("Brush-in Programs") received considerable attention in the late 1960's and early 1970's. This procedure is appealing because it promises efficacy, minimal frequency of application (as infrequent as once a year) and treatment of nearly unlimited numbers of children at one time. The low cost per application enhances its appeal.

Results of studies of annual "Brush-ins" have been inconclusive,^{9,10} but those in which semi-annual applications have been made are more promising.¹¹ The principal agent used in these studies was 8.9 percent stannous fluoride with a zirconium silicate abrasive. Children generally disliked the astringent taste of this paste. The principal commercial product that was used and evaluated in the past is no longer being manufactured in the United States and Canada, but other brands and pastes with similar formulations are still being used annually in some communities. This is difficult to understand when other, proven methods of self-application of fluoride are available. Claims that a side-benefit of "Brush-ins" is toothbrushing instruction remain unsupported.

Gel-trays

The daily use of concentrated fluoride gels in custom-

made dental trays was found in one study to reduce the increment of dental caries by 75 to 80 per cent.¹² With this method of application, small amounts of fluoride in high concentration (0.5 percent) can be held in intimate contact with the teeth without being diluted by saliva. The method, however, demands much time, is complex and expensive; prohibitively expensive for public health programs. Further research is needed with this method in which flexible, preformed trays are used and in which frequency of application is greatly reduced.

Dentifrices

Toothbrushing with dentifrices that contain fluoride is regarded most often as a home-based rather than a school-based procedure. Substantial data exist to show that ad libitum toothbrushing with a recognized product will reduce the incidence of dental caries by about 20 to 25 per cent.¹³ Currently, about 80 per cent of all dentifrices sold in the USA and Canada contain fluoride. Because use of fluoride dentifrices by children at home is already widespread, it is unlikely that school-based toothbrushing programs with fluoride dentifrices will confer additional protection against decay. The purchase of dentifrice for school programs is expensive. The procedure should be done daily and requires facilities for rinsing mouths and brushes. The need for sanitary storage of brushes is another disadvantage of this regimen when done in schools. Children (and adults) should be encouraged to use a fluoride dentifrice regularly at home.

Mouthrinsing

At least 25 clinical trials have shown that incremental dental caries can be reduced by an average of about 35 per cent by mouthrinsing daily or weekly with dilute solutions of fluoride.¹⁴ A series of 17 demonstrations of the value of fluoride mouthrinsing, sponsored by the National Institute of Dental Research, has confirmed the value of this method.¹⁵ Daily and weekly regimens have been shown to have similar effectiveness. Therefore, the latter has been adopted more widely in school-based caries preventive programs because less time, materials and costs are required. At the present time, the cost of materials for weekly mouthrinsing in school with 0.2 per cent sodium is minimal.

The method has several advantages compared with the others; (1) The technique is easy for school-age children to learn; (2) Little classroom time is required — 5 minutes per week; (3) The few materials required are inexpensive; (4)

Non-dental personnel with minimal training can easily supervise, (5) Participants accept the procedure well.

Because a fluoride mouthrinsing program is so inexpensive, it can be recommended as cost-effective for both non-fluoridated and fluoridated communities. On the debit side, the procedure provides only topical and not systemic exposure to fluoride, which would be desirable in communities with inadequate concentrations of fluoride in drinking water. Moreover, benefits probably last for only as long as rinsing is practised; there is no evidence of post-treatment effects. In the USA, current estimates indicate that about eight million children are taking part on a regular basis in school-based fluoride mouthrinsing programs.

Dietary supplements

Dietary fluoride supplements provide a sizable topical cariostatic effect to erupted teeth¹⁶ and their use in school-based programs is increasing. The use of fluoride tablets share most of the advantages cited for fluoride mouthrinsing. They have several additional advantages: they confer systemic fluoride exposure to unerupted teeth; they may be used safely by pre-school children, whereas pre-schoolers cannot control their swallowing reflex adequately to engage in a mouthrinsing program; and no waste products result from their use. Costs for fluoride tablets in schoolbased programs can be as low as 20 cents per child per school year. Of course, these programs are unsuitable where the drinking water contains appreciable levels of fluoride.

Certain combinations of the aforementioned procedures may provide additive benefits. For example, for caries-active children, a combination of a concentrated fluoride gel applied in trays for several weeks plus routine mouthrinsing with a dilute fluoride solution may be warranted to reduce caries activity. Combinations of procedures for school-based programs may be used increasingly in the future. One recently reported study showed a 45 per cent lowered prevalence of DMF surfaces among children who, for six years, took a fluoride tablet daily and rinsed weekly with 0.2 per cent sodium fluoride in school and used a fluoride dentifrice at home. The prevalence of dental caries in approximal tooth surfaces was reduced dramatically — by 85 per cent.¹⁷

PIT AND FISSURE SEALANTS

The use of adhesive sealants for preventing the development of dental caries in pit and fissure sites of teeth is a

significant advance in preventive dentistry. A high prevalence of carious lesions in occlusal surfaces of both primary and permanent posterior teeth has been well documented.^{18,19} Although occlusal surfaces comprise only 20 per cent of all surfaces of posterior teeth, occlusal decay accounts for about 50 to 60 per cent of all carious surfaces in those teeth.

Fluoride is particularly effective in preventing decay in the smooth surfaces of teeth; it is less effective in the occlusal surfaces. Even intensive fluoride therapy often cannot overcome the susceptibility to decay of occlusal surfaces.

Most recent attempts to seal or occlude pits and fissures have used organic polymers that bond to enamel. Although several materials have been tested as sealing agents, the reaction products of Bisphenol-A and glycidyl methacrylate (commonly referred to as Bis-GMA) have been evaluated most widely in clinical trials and show the most promise. The Council on Dental Materials and Devices of the American Dental Association currently recognizes as effective two Bis-GMA sealants: Nuva-Seal, which requires the use of ultraviolet light for polymerization, and Delton, which is self-polymerizing.²⁰

The adhesive sealant forms a barrier to prevent bacteria and their food supply or nutrients from entering pits or fissures. The application procedure for sealants requires meticulous attention to detail. With the materials currently available, acid etching of the enamel surface is necessary to produce a good physical bond between the tooth and the sealant.

Concern has been expressed about areas of enamel that are conditioned with acid prior to sealant placement, but which do not get protected by sealant. Are these areas more susceptible than usual to dental caries? Several investigators have shown that acid-etched enamel remineralizes in saliva within a short period of time and that it is impossible to observe any clinical difference between adjacent etched and unetched areas after 2 days.²¹ Analysis of the data from several studies fails to show any differences in caries susceptibility between etched sites that had lost sealant and their contralaterally matched control sites.²²

Sealants should be used in conjunction with topically applied fluorides but the sequence of application is important. Topical fluorides should be applied following placement and polymerization of the sealant because etched enamel surfaces react with some fluorides to form products that significantly lower bonding strength.

In general, occlusal surfaces of posterior teeth require restoration two to three years before the approximal sur-

faces of the same teeth require care.²³ In non-fluoridated communities, pit and fissure sealants can reduce the need for occlusal restorations that may have to be replaced when proximal surfaces decay. It follows then that in fluoridated communities, sealants may exert their maximal effect because smooth surfaces are protected greatly from decay. With the judicious use of sealants and fluorides, most permanent teeth may never have to be restored.

One concern of some dental practitioners is the possible danger of placing sealants over incipient carious lesions. Studies however have shown that retention of sealant when placed over incipient lesions is better than in those surfaces classified as caries-free.²⁴ Lesions over which sealant material remains intact have not shown signs of progression, suggesting that the carious process has been arrested. Bacterial counts of material taken from these lesions after intervals as long as two years have shown huge reductions in the numbers of cultivable bacteria. It appears that as long as the sealant is intact over the pit and fissure, the viability of the bacteria will decrease and ultimately the carious lesion may become sterile.^{24,25}

The placement of sealants requires meticulous attention to technique. Studies have shown that auxiliary dental personnel with adequate training can apply the material as effectively as dentists.²⁶ The impact of sealants on dental caries as a national health problem will depend ultimately on their cost-effectiveness. Estimated costs of the currently available sealant treatments are relatively high, when compared with some other preventive methods.^{27,28} However, it must be remembered that adhesive sealants are designed to prevent dental caries in occlusal surfaces of teeth which account for approximately 50 per cent of all decay.

Certainly, sealants have a place in the caries preventive armamentarium. The application of sealants is a good introduction to dentistry for children; it requires no cavity preparation and takes only a small amount of time. When their use is combined with fluoride therapy, the combination has the potential of greatly reducing dental caries.

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Oral hygiene measures

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In North America, the phrase, oral hygiene measures, evokes images of plaque control programmes and their attendant tools — especially toothbrushes and dental floss, but also disclosing agents and other interdental cleaning aids. In many countries, people rely extensively on mechanical methods to remove or control dental plaque. Toothbrushes and dental floss are the devices most frequently recommended for this purpose. Although there is evidence to show that brushing and flossing reduces gingival inflammation, their effectiveness in reducing dental caries is equivocal. Regardless, a few

MESURES D'HYGIÈNE BUCCALE

En Amérique du Nord, l'expression "mesures d'hygiène buccale" est pratiquement synonyme de programmes d'élimination de la plaque et des instruments qu'on utilise à cette fin, surtout la brosse à dents et le fil dentaire, mais elle englobe aussi les agents révélateurs et les dispositifs pour nettoyer les interstices dentaires. Dans un grand nombre de pays, les gens recourent intensément à des méthodes mécaniques pour enlever ou maîtriser la plaque dentaire. La brosse à dents et le fil dentaire sont les dispositifs les plus communément recommandés à cette fin. Bien qu'on ait prouvé que le brossage et l'utilisation du fil dentaire réduisent l'inflammation gingivale, leur efficacité est douteuse quant à la réduction de la carie dentaire, affirme Alice Horowitz, du National Caries Program, National Institute of Dental Research, Bethesda, Maryland.

years ago many proponents attempted to implement large plaque control programs in schools, and practitioners in their offices tried to persuade children and adults to practice daily removal of plaque.

The flurry of interest in such programs has waned; however, plaque control remains big business, as evidenced by the multitude of companies that promote sales of new types of toothbrushes, dental floss, audiovisual aids and a variety of gimmicks for plaque removal. Moreover, new positions have been established in clinical settings with titles such as "control nurse" or "control therapist". These persons are trained to teach flossing and brushing to patients.

Because plaque control programs and products are supposed to prevent dental caries and periodontal disease, the data that support these claims must be evaluated. What scientifically-based information exists about the value of each oral hygiene measure?

Dental plaque on teeth and their surrounding oral tissues is recognized as being a requirement for the initiation of both periodontal disease and dental caries. The precise actions of the organisms in plaque that are responsible for these oral diseases, however, are unknown.^{1,4}

Recently, two studies were made on the effect of dental caries and gingival inflammation of removing dental plaque by brushing and flossing.^{5,6} In both of these studies, the oral hygiene procedures were supervised daily in school for three academic years. One study with children who were initially in grades 5 through 8 was done in rural East Hampton, Connecticut, where the concentration of fluoride in the water supply is negligible.⁵ After ten sessions of instruction, a test group removed plaque under close supervision by trained personnel. Daily, the children used toothbrushes, a non-fluoride dentifrice, dental floss, and a disclosing agent.

The control group neither received instructions in plaque removal procedures, nor did they practice oral hygiene procedures in school.

Mean incremental DMFS scores after 32 months were 15 per cent lower in the test group than in the control group, although this difference was not statistically significant. The mean plaque score for girls in the treatment group was reduced by 27 percent, whereas the score for boys was reduced only nine per cent. At the final examination, girls in the treatment group showed a reduction in gingivitis of 40 per cent and the boys' mean score was reduced by 17 per cent. Although these changes in gingivitis in the treatment group were statistically significant when compared with controls, from a practical or clinical standpoint, they were relatively small. An important finding is that differences in plaque and gingivitis scores that occurred between groups during each year virtually disappeared during summer vacations.

In the other study conducted in two schools in Oakland, California, examinations after 29 months showed that in one school mean plaque and gingivitis scores were lower in the treatment group than in the control group, but in the other school, only the mean gingivitis score in the treatment group was lower compared with the control group.⁶ There was no reduction of dental caries increments at either school.

The children in both the Connecticut and California studies used thorough and rigorously supervised oral hygiene procedures to attempt to remove plaque in school. These findings suggest that only modest benefits can be realistically expected from school-based programs intended to control plaque by mechanical methods.

In addition to the objective findings of the Connecticut study, some of the day-to-day experiences and observations made during its three years' duration are worth mentioning. The daily sessions profoundly bored most of the students after the first few sessions. Many participants remained in the program only because of parental pressure. Although cost-effectiveness estimates are not available, a program that requires paid supervisory personnel, large quantities of paper products and other supplies is obviously expensive. Moreover, the experience suggests that thorough, daily plaque removal in school requires more enthusiasm and discipline than most students, faculty and program personnel can muster for extended periods of time.

This is not to suggest that oral hygiene instruction, or even oral hygiene regimens be dropped in schools, but rather that such activities should not be the major focus of a school-based preventive dental program. The concept of regular and thorough use of a toothbrush is not new. Almost everyone beyond age three knows that "you should brush your teeth." Toothbrushing, however, is not synonymous with thorough plaque removal, and

both regular and thorough plaque removal is necessary to improve an individual's oral health. If oral hygiene is to be practised in schools, a fluoride dentifrice should be used. Otherwise, the procedures should be valued only for their ability to reduce gingivitis, and that will happen *only* when the children are adequately trained and supervised.

Because dental caries is the leading chronic disease of children and may lead to infection of deeper tissues as well as pain and disfigurement if teeth must be removed, proven, primary preventive procedures are mandatory. Today, the most effective primary methods for preventing dental caries are the various methods of administering fluoride. To offer youngsters and their parents only oral hygiene measures to prevent and control this pervasive disease is scientifically questionable and ethically unsound.

However, because the only method now available to the public for controlling gingivitis is oral hygiene, methods for mechanical removal of dental plaque warrant further discussion.

In an appraisal of programs of plaque control, Heifetz and his co-workers, cited the lack of definitive information to support the use of a specific kind of toothbrush, method of toothbrushing, kind of dental floss, method of flossing and the frequency with which both should be used.⁷ Since then, these gaps in knowledge have been narrowed only slightly if at all.

TOOTHBRUSHES

A wide variety of toothbrushes are commercially available. No one type is appropriate for every child. Selection of a toothbrush by the public is probably based on cost, availability, habit and color of the handle. Some guides exist for the professional to use in recommending a proper brush, although these guides are more often based on common sense than scientific findings. For the child with primary teeth, the head of a toothbrush must be small and the filaments should be medium and uniform in length. The toothbrush should be multi-tufted for brushing efficiency. Unfortunately, many manufacturers continue to make toothbrushes for children with thin, hard to hold handles that children *cannot* manipulate adequately. Eating utensils, pencils, crayons and other items that require the use of tiny fingers and wrists are frequently made larger than usual for youngsters to grasp and to use more effectively, but this concept has not been incorporated in the designs of children's toothbrushes. Although the manual dexterity of young children has not been researched adequately — particularly with regard to oral hygiene practices — undoubtedly a young child would be more adept at manipulating a toothbrush with a thick handle rather than one that is spindly. Adults who brush a child's teeth will also find it easier to use a brush with a thicker handle.

For children with a mixed dentition, the use of a junior-sized brush may be warranted. According to the position of teeth, size of mouth and dexterity of the child, a health professional should determine the need for a larger brush.

METHODS OF TOOTHBRUSHING

The most important factor in assessing any toothbrushing method is that plaque should be removed as thoroughly as possible without damaging either the hard or soft tissues. Many ways of brushing teeth have been described and advocated over the years. The roll method was recommended most frequently until recently, even though there is little evidence to support its superiority over other technics.⁸ Several investigators have compared the effects of different toothbrushing methods. Generally, they have found the roll method to be either inferior to or no better than other methods of brushing as measured by plaque removal. Moreover, some investigators have observed the most common brushing action among children was a horizontal stroke.^{9,13}

More recent studies have shown the scrub method of brushing by children is particularly effective in removing dental plaque.^{17,19} Based on what is known today, the scrub method, used with very short back-and-forth vibratory strokes, is the favored procedure for the young child. For the scrub method, a soft- or medium-filamented, multi-tufted toothbrush should be used.

Even with thorough instruction in a toothbrushing technic, close supervision and assistance are essential if most children are routinely to remove plaque effectively. For this reason, parents should be advised to brush the teeth of their preschool children; it is unfortunate that many children are allowed to attend their own oral hygiene procedures, completely unsupervised. Yet, most parents would not consider allowing their preschool children to bathe or shampoo their hair without assistance. A conscientious practitioner will insist that an adult *must* either supervise or perform plaque removal for their young children.

No definitive studies have suggested the age at which most children are capable of thoroughly removing plaque themselves. Generally, until a child is seven or eight years of age, an adult should perform or closely supervise the plaque removal procedures at least once daily and remind and encourage the child to practise good toothbrushing at other times.

Because children accumulate plaque at different rates, recommended frequency of thorough removal of plaque should be based upon the needs of each child. Many factors should be taken into account in making specific recommendations, such as caries experience, gingival health, position of teeth and occlusion, but thorough plaque removal should take place at least once daily, preferably just before retiring at night.

DENTAL FLOSS

Dental floss is the cleaning aid that is most frequently recommended for removing bacterial plaque from approximal tooth surfaces. Studies to evaluate the usefulness of dental floss for this purpose, particularly in the mouths of young children, are sparse. The results of a dental flossing study reported by Wright and co-workers^{20,21} indicate that daily flossing of posterior teeth of first grade children by trained assistants significantly reduced dental caries after eight and 20 months. Their study, however, included only a few participants (44) and the teeth were flossed by trained assistants. The use of dental floss in young children cannot be recommended without reservations. Conclusive evidence is lacking to support the efficacy of the use of dental floss in the mouths of young children and the procedure is quite demanding on the adults responsible for flossing children's teeth. Flossing, if recommended, should be probably limited to areas of a child's mouth where there is contact between adjacent teeth.

Many kinds of dental floss or tape are commercially available: waxed, unwaxed, semi-waxed, shred resistant, minted and plain, and some floss is impregnated with fluoride. To date, there are no definitive studies indicating that one type is superior to another.²²

In recent years, many kinds of floss holders have been developed. The value of these devices has yet to be determined scientifically. The need for thorough instruction on their use is apparent.

Until a practitioner is confident that a child can use dental floss properly, an adult should do the flossing. There is only limited evidence to indicate the age at which children can master the correct use of floss.²³

Additional aids that adults may find valuable in removing approximal plaque from the mouths of small children include knitting yarn or interproximal toothbrushes. These items may be particularly useful in removing plaque from approximal surfaces with an open contact or where there is no adjacent tooth.

If appropriate oral hygiene practices have any potential for improving the oral health of the public, its chances for success are most likely to be achieved in a clinical setting. Learning correct oral hygiene procedures can probably be achieved most successfully in a tutorial setting.

Attempts to provide factual information, develop skills and instill habits in children and their parents can be gratifying activities. Young children are typically at a stage of development when the acquisition of facts about themselves is a primary goal. Moreover, young children often are eager to please adults. Thus, the young patient is ripe for learning new behaviors or for modifying existing behaviors. Concomitantly, parents of young children usually have a keen interest in the

health of their children, and are also usually eager to comply with recommended health practices.

Despite the general consensus of the dental profession that oral health education should be a part of clinical treatment, there is some evidence to suggest that teaching oral health — including oral hygiene measures — is not being done by practitioners as much as one might expect.^{24,25} There is some indication that patients do not practise oral hygiene procedures because dentists do not recommend these procedures as often as they think they do. Health practitioners probably overestimate the extent of their instruction and recommendations.

What exactly must the dental practitioner do to persuade his patients to act upon his recommendations for oral health? Why do some patients adopt a prescribed regimen while others do not? Although precise answers to these questions are not known, the effective use of what is known is pivotal to improving oral health of patients. The practitioner must strive to make patients fully understand their oral conditions. The prescribed therapy should be kept as simple as possible, and, perhaps most importantly, the practitioner should continue to check on the patient's compliance with the regimen at each available opportunity. Compliance with a prescribed regimen is not only the patient's responsibility; it is shared by the patient *and* the clinician. How many practitioners routinely measure and chart plaque accumulations in their patients' mouths as an indicator of oral hygiene practices. How many inquire whether their patients are using a fluoride-containing dentifrice as recommended? If practitioners are not concerned enough to ask their patients about the particular recommendations or prescriptions they have made, why should the patients feel strongly about complying with the suggested measures?

Although we do not know precisely how to achieve patient-compliance, particularly for the prevention of chronic diseases, such as dental caries and periodontal disease, it is clear that a patient cannot comply with a recommended regimen unless he understands it, has the required armamentaria to accomplish it and is able to perform the prescribed practices. Research to improve patient compliance with oral health regimens is indeed desirable. At this time, reliance must mainly be on the mechanical removal of dental plaque to prevent gingivitis. The need for a safe, effective and acceptable chemical agent to control plaque is readily apparent. Even when such an agent becomes commonplace, the use of oral hygiene measures will probably still be encouraged.

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Diet and nutrition and dental caries

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Diet differs from nutrition in that it embraces everything that is eaten regardless of its nutritional value and regardless of its fate in the digestive tract. Nutrition deals only with those elements of the diet that are absorbed from the intestinal tract and enter into the metabolic processes of the body. While nutritional effects are dependent upon the diet, the dietary effects as in dental disease, need not be related to the nutritional response of the body.

ALIMENTATION ET LES CARIES

Les dentistes devraient fortement déconseiller la consommation de sucreries ou d'aliments à base d'hydrate de carbone, sauf aux repas, explique le Dr Basil Bibby, de Rochester (New York). Ils devraient insister sur le fait qu'il est plus nocif de manger fréquemment des sucreries que d'en consommer une quantité plus massive à l'occasion d'un repas. Malheureusement, de nombreuses personnes refusent de renoncer aux casse-croûte, pour des raisons sociales et parfois médicales. La seule façon de les aider est de les inciter à choisir des aliments qu'on sait ne pas causer de caries, plutôt que de consommer des sucreries comme casse-croûte. À recommander: les noix, le fromage, de lait, la viande, les légumes, les amuse-gueule salés, les fruits et les aliments sans sucre . . . Il existe probablement des aliments à base d'hydrate de carbone qui sont relativement inoffensifs pour les dents, mais on ne les a pas encore identifiés.

NUTRITION AND CARIES

While Galen's concept of the cause of disease held sway, the belief that dental caries was the result of internal or systemic influences was not seriously questioned. About a hundred years ago when the role of bacteria in disease causation gained general acceptance, the stage was set for acceptance of the long foreshadowed chemico-parasitic theory of caries causation. Later when clear causal relations between nutrition and diseases such as rickets, pellagra, and beri beri were established, dental caries and periodontal disease were believed preventable by feeding children diets which were nutritionally adequate.

During the second and third decades of this century there was voluminous literature dealing with the effects of nutritional deficiencies on tooth development and structure, and on caries activity in animals and man. The action of Vitamin D attracted most attention, but much research was also done on the effects of Vitamins A, B, C, or E, mineral deficiencies, calcium-phosphorus imbalances and acid-alkaline base diets. Reviews of this work have been offered by Day¹, Bagnall², Shaw³, Bibby and Shaw⁴, Mandel⁵, Navia⁶, and others and need not be detailed here.

The general conclusions which emerged were the following: (1) Vitamin D deficiencies and possibly Ca:P imbalances can produce developmental imperfections in the structure of the dentin, and sometimes of the enamel, but the teeth are much less affected than are other calcified tissues; (2) The use of nutritionally deficient diets was reported to increase caries in animals, but such findings lack adequate confirmation; (3) Although some early clinical studies in children found that supplements of Vitamins

A, B, or C, or phosphates offered some protection against caries, subsequent studies were unable to confirm the findings; and (4) Epidemiologic surveys have failed to establish a relationship between nutritional deficiencies and increased caries.

A single example of each type of epidemiologic study will be cited. In 1935 we⁷ compared the then available published information on the nutritionally deficient and caries status of eighteen natural population groups. High caries prevalence could not be related to any specific nutritional deficiency, but it did show some association with more frequent eating.

In a comparison of a group of healthy young adults, and a group shown to be clinically and biochemically deficient in Vitamins A, B, exhibited more than three times as much caries than the adequately nourished subjects⁸. In the international survey carried out by the Interdepartmental Committee on Nutrition for National Development⁹, no clear relationship could be found between nutritional conditions and caries prevalence, but it seemed that the poorly nourished population had less dental decay.

FLUORINE

In 1938 when it was shown that fluorine in the water prevented caries, nutritional effects on tooth development were still believed to be important determinants of tooth resistance to caries. It was natural therefore, to assume that fluorine acted through nutritional channels to build caries resistant teeth. In spite of the contradictory evidence that has accumulated over the years, this belief still persists, and it is not yet generally accepted that it is only after enamel formation is complete, or when it has undergone superficial demineralizations, that fluorine exerts its principal effect¹⁰.

DIETARY AND LOCAL FACTORS IN CARIES

The failure to demonstrate clear associations between the nutritional effects of diets and caries redirected attention to other ways by which foods could modify caries activity. It soon became more firmly established than ever before that the use of certain types of foods, the carbohydrates, were particularly caries conducive and that they exerted their cariogenic effect by acting directly on the surface of the tooth. Some observations allowed no alternative explanation.

The sites of caries attack provide an example. While it is impossible to attribute the wide variations in caries incidence in different teeth or tooth sites to nutritional influences, it can be satisfactorily explained as the result of food retention¹¹. From an examination¹¹ of 400, 14 year old boys in Rochester, New York (**Table 1**), the lower molars and lower incisors, which developed under the same nutritional and systemic influences, have widely different caries experiences. This is also true of the cuspids and bicuspid,

and the buccal surfaces of the upper and lower molars, or the lingual surfaces of the same molars. These anomalies can be explained by noting that the teeth, or surfaces, that show high caries, all offer sites which favor retention of bacteria and food residues.

Even more convincing evidence that caries is the result of food contact with the tooth surfaces, rather than any nutritional effects of ingested foods operating through the blood stream comes from experiments in animals¹². When caries producing diets in liquid form were fed to animals by means of stomach tube, so that no food came in contact with the teeth, caries did not occur; when this same diet was eaten the normal way, and allowed to come in contact with the teeth, there was active caries (**Table 2**). Even more interesting is the finding that caries resulted when only the carbohydrates were taken orally, and the remainder of the diet given by stomach tube¹³.

CARBOHYDRATES AND CARIES

While almost all available evidence indicates that carbohydrate fermentation in the mouth is an essential component of caries causation, this does not mean that all carbohydrate containing foods are equally destructive to teeth. While there is reason to believe that sucrose contributes more to caries causation than other foods, that does not mean that sucrose is the only cariogenic carbohydrate¹⁴.

Clinical observations have not as yet, produced con-

Table 1						
Caries Incidence on Certain Tooth Surfaces of 433 Rochester Children Aged 13 Years*						
Surfaces	$\overline{6}\overline{6}$	$\overline{1}\overline{1}$	$\overline{2}\overline{2}$	$\overline{5}\overline{5}$	$\overline{3}\overline{3}$	$\underline{6}\underline{6}$
All	1220	123	89	633	33	1448
Buccal	356	—	—	9	—	59
Lingual	24	—	2	—	—	400

*Adapted from Day and Sedwick (1935)

Table 2				
Effect of Stomach Tube Feeding*				
	No. of Animals	Av. Carious Molars	Av. No. Lesions	Av. Extent
Tube-Fed	13	0	0	0
Control	13	5.0	6.7	10.6

*Adapted from Kite et al, 1950

vincing evidence of a parallelism between caries incidence and changes in sucrose consumption. The reductions in caries that occurred when sucrose was in short supply during the World Wars is often cited. However, regardless of how important the sucrose factor was, it has to be kept in mind that there were other alterations in the diets that could have been important, such as the use of less refined flour and reduction in frequency of eating. Similarly the increasing prevalence of caries in Western Europe over the centuries during which time there was a several-fold increase in sucrose consumption, does not make a clear case. Other food uses also changed, most notably the appearance of increasingly refined wheat flours. More recent observations in the United States indicate that caries increased without any correspondingly greater consumption of sucrose. In the three decades, preceding the introduction of fluoride, there seems to have been a rise in caries prevalence during which period there was no increase in the use of sucrose¹⁴.

In general it is true that the countries or population groups which show high levels of caries are those who use most sucrose. There are however modifying factors in the diets other than sucrose consumption. Neither is higher sucrose consumption consistently associated with more caries. For instance, caries is lower in Southeastern USA than in New England, in spite of the fact that the southerners eat almost fifty percent more sucrose¹⁴. Pre-adolescent girls consume less sucrose than boys of corresponding age, yet they are known to have more caries¹⁴.

Obviously there are modifying factors other than sucrose in human dietaries that play a part in determining their effect upon caries. These are poorly understood, but something of their character can be found in an examination of variations in dietary habits, and the properties of individual foods which may modify caries activity.

Differences in Cariogenicity of Foods — I —
Clinical Evidence

CARBOHYDRATE CONTENT

In Vipeholm, Sweden, the inmates of a mental institution were fed annual successions of carefully controlled diets of one sort or another, over a five year period¹⁵. Between meals feeding of a high sugar diet of 24 toffees per day over a two year period produced a dramatic increase in caries (Figure 1), but when this sugar was discontinued, caries receded to a negligible level. However, although this study group demonstrated the cariogenicity of sucrose, the findings in other groups showed that factors besides the content of sucrose were important (Figure 2).

FREQUENCY

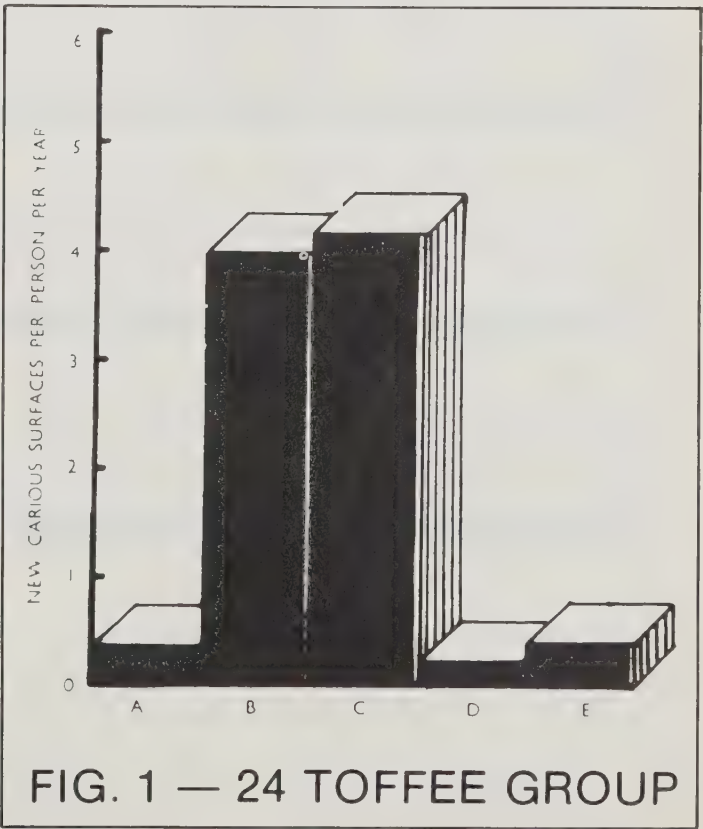
One of the factors which played a part in modifying the sucrose effect is illustrated in Figure 3¹⁵. This patient

group was fed caramels twice each day during the third year of the experiment, a marked increase in caries resulted. In the fourth year of the experiment, however, the same total caramel ration was divided into four parts and eaten at four different times. This change from two to four feedings produced a definite increase in caries even although the total amount of sugar eaten each day remained constant. The importance of this test is that it shows that the frequency of eating sugar is almost as important as the total amount eaten in the causation of dental decay.

Further evidence of the importance of the frequency of eating is shown in the next chart (Figure 4). This gives the results of a study on more than a thousand five year old children in Tennessee⁶. The frequency of eating of candies, cookies, chewing gum, or carbonated beverages was determined by child-parent interviews and compared with the numbers of decayed teeth in the children's mouths. It can be seen that the children who did not eat between meals had the fewest decayed teeth, and that the number increased in proportion to the frequency of eating. Moreover, higher frequency of eating is a finding that has consistently appeared in clinical observations on patients with active caries.

FOOD ADHERENCE

Another factor that probably has an influence upon the cariogenicity of foods is the length of time they adhere to the teeth after eating. As part of the Vipehold Study mentioned above, Lundquist¹⁷ determined the speed of clearance of foods from the mouth after eating. His findings are



SUCROSE VS. CARIES (Vipeholm)

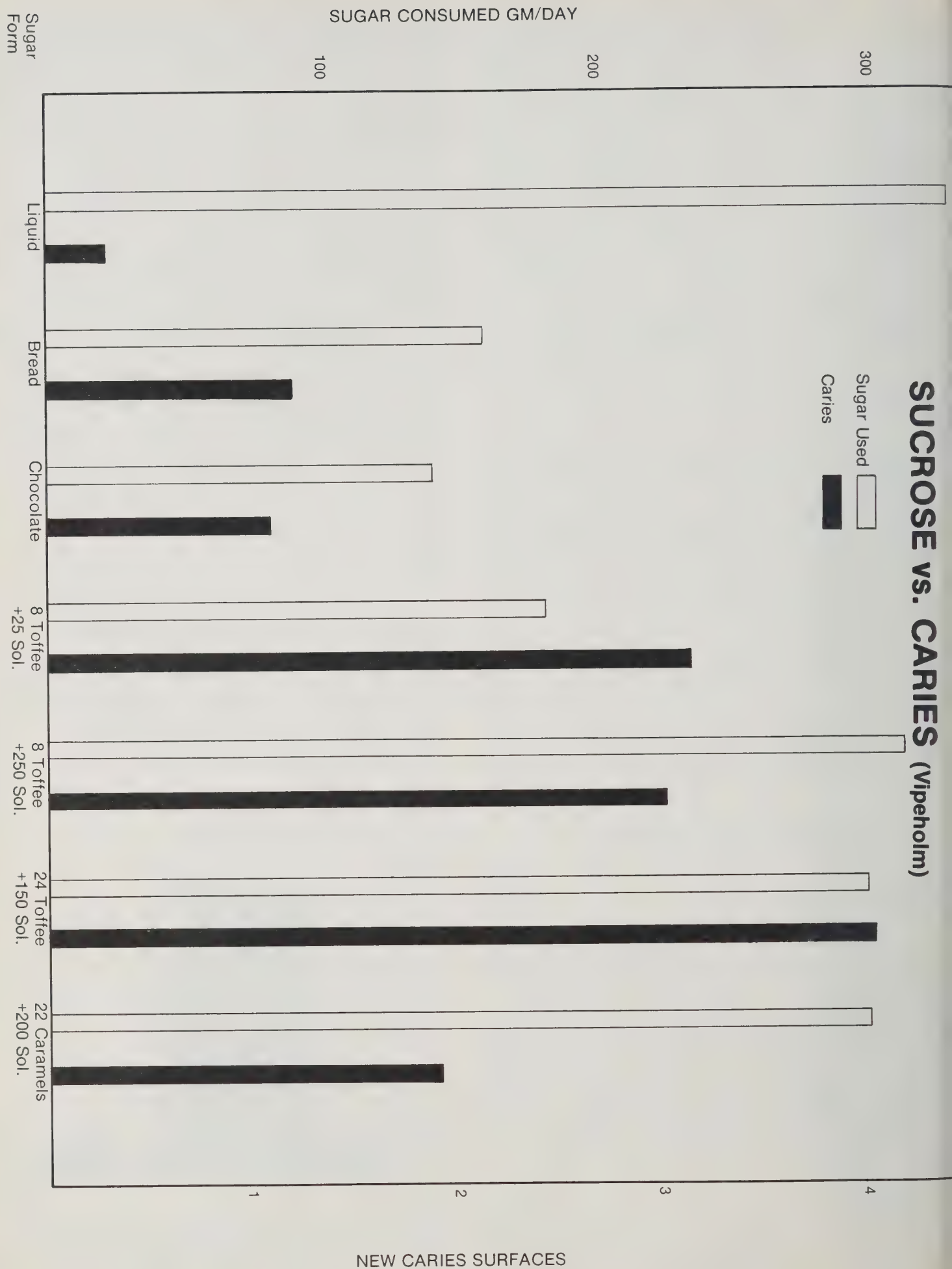


FIGURE 2

given in **Figure 5**. This shows a suggestive relationship between the amount of the Vipeholm diets retained on the teeth after eating, and the amount of dental decay occurring in the various groups of patients.

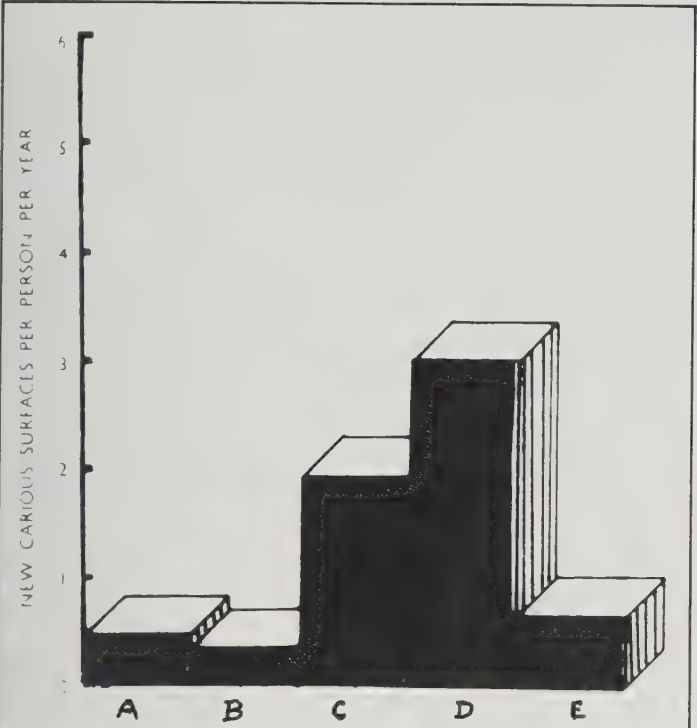
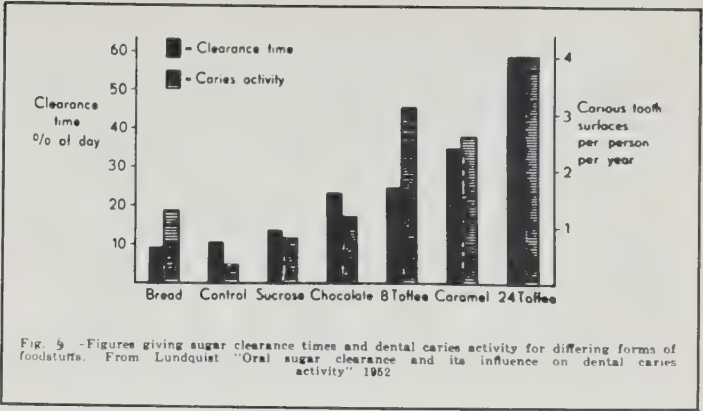
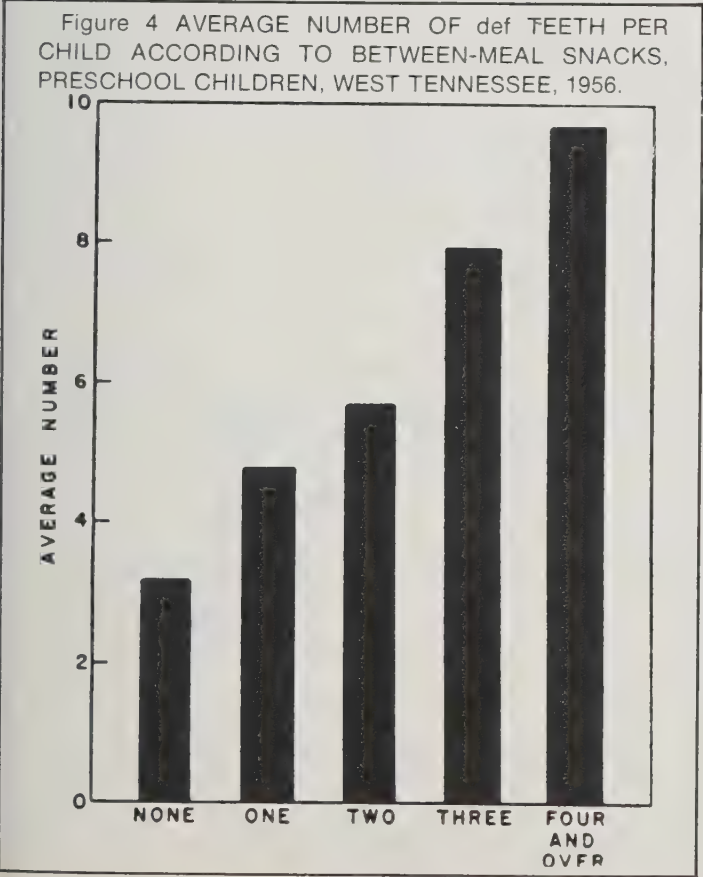


Fig. 3. — CARMEL GROUP



FOOD TEXTURE

Further evidence that factors related to physical properties of the food are important in caries emerged from the Vipeholm Study. When a comparison was made between the amount of dental decay occurring in a group of patients consuming 75 gms of sucrose a day in liquid form in their tea and coffee, and the caries found in a group consuming only half that amount of sucrose in solid form in bread, it was found that twice as much decay developed in the bread group in spite of their smaller sugar intake. The dramatic thing about this finding is that while eating only at meal times, twice as much dental decay occurred in the patients in the bread group in spite of the fact that they were only eating half the amount of sugar consumed by those who took the sugar in liquid form. Tests in animals also show that sugar in liquids is much less conducive to dental decay than when used in solid form¹⁸.

Differences in Cariogenicity of Foods — II. Laboratory Evidence

ACID PRODUCTION FROM FOODS

Acid production from different foods on fermentation by mouth bacteria has frequently been used as an index of the amount of dental decay the foods would cause. Even within the same classes of food there are quite wide differences in the amount of fermentation acid which they form (**Figure 6**). The amount of acid formed from a food on fermentation by salivary bacteria is not proportionate to its sugar content. High concentrations of sucrose actually prevent fermentation. That, of course, is why they are used as preservatives in jams and jellies. Some additions such as flour seem to promote acid production from sucrose (**Table 3**), others such as acid inhibit it.

ENAMEL DEMINERALIZATION

In polarized light studies of the extent of caries-like change produced in enamel placed in tubes in which salivary bacteria were fermenting foods, it was found that the amount of caries-like demineralization did not parallel the amount of acid produced from the foods. This finding has

Table 3
Sugar Content and Acid Production (6 hrs.)

Substrate	Sucrose Content	Final P H	Titrated Acid (Ml 0.5M NaOH)
*Lab Cake	25%	4.75	2.04 ± 0.13
Sucrose Sol.	25%	5.31	0.58 ± 0.09
Sucrose Sol.	10%	4.97	0.85 ± 0.07
Sucrose Sol.	2%	4.95	0.91 ± 0.08

*Contains 40% Wheat Flour

Table 4
Acid Formation and Enamel Dissolution by Some Foods

Food	Acid Formed 0.05 M NaOH ml	Enamel Dissolved ms
Whole Wheat Bread	11.0	0.2
White Bread	8.4	0.4
Corn Flakes Cereal	4.3	0.5
All Bran Cereal	16.2	0.1
Choc. Coconut Bar	11.1	1.1
Milk Chocolate	13.2	0.1
White Flour	4.9	1.0
Graham Flour	5.1	0.2

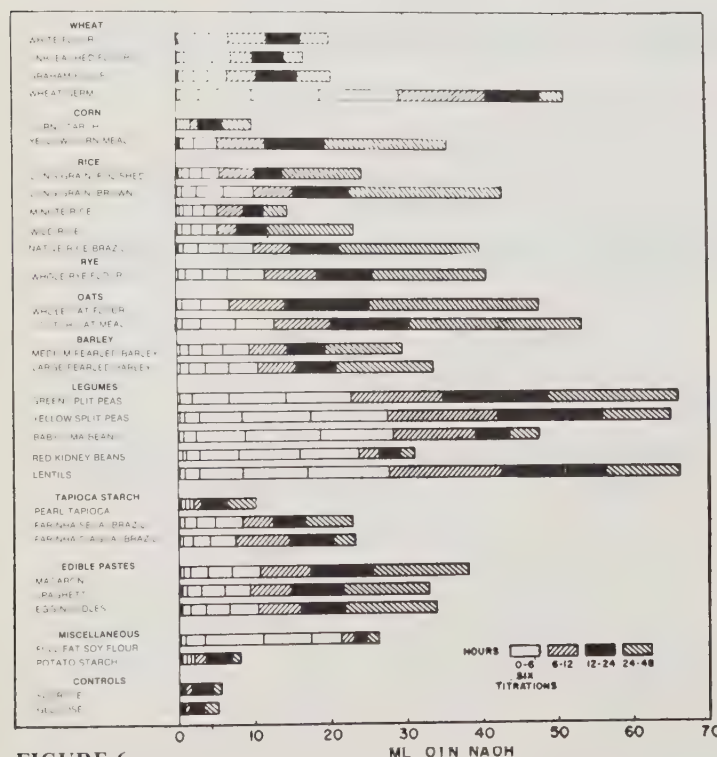


FIGURE 6

been confirmed by both gravimetric and isotope methods. This lack of parallelism can be the result, either of the formation of different types of fermentation products, or of the presence in the food of substances which limit enamel demineralization. Examples of the lack of relationship between acid production and the amount of enamel destroyed by foods are given in **Table 4**. That the differences in enamel dissolution are related to the factors of the sort mentioned rather than the amount of sugar present for fermentation is shown in **Figure 7**, in which effects of different cereals bases or additives in breakfast cereals can be seen to have more effect upon the amount of enamel dissolved than does the sugar content. Further evidence along these lines is offered in **Figure 8**, which shows that the relatively small amount of acid produced by wheat flour demineralizes a large quantity of enamel, and that the acid to demineralization ratios differ as bran is added. With pure wheat bran there is a large quantity of acid formed, but no enamel demineralization. **Figure 9** shows that among the sugar products tested, molasses produces the most acid, but in spite of this it destroys the smallest amount of dental enamel. A similar lack of parallelism between acid production and enamel dissolution has been found in tests on popular candies.

ACID FORMATION IN DENTAL PLAQUE

Since dental decay attacks teeth from the outside, it seems logical that the amount of acid that foods form in the deposits or plaques on the tooth surfaces would indicate their cariogenicity. Plaque acidity is measured in several ways, but these need not be described here.

The amount of acid produced in plaque seems to depend upon the age and thickness of the plaque, and the nature of

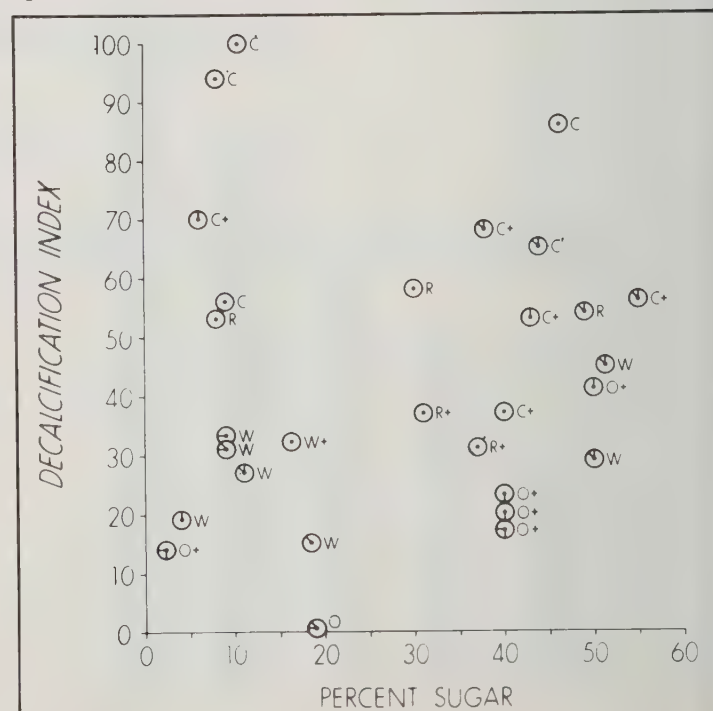


FIGURE 7

the substrate tested (Figure 10). There only seems to be indirect evidence on the effect of different sucrose concentrations on the depth of the pH depressions they produce.

Jenkins and Kleinberg¹⁹ found that high concentrations of sugar did not produce their lowest pH until they had undergone some dilution in saliva. In a group of breakfast cereals tested by another method, the same curves were obtained in spite of five-fold differences in sucrose concentration²⁰. These breakfast cereals, incidentally, produced widely different amounts of enamel demineralization and animal caries²¹.

ANIMAL CARIES

Published reports show that sucrose and glucose are the most cariogenic carbohydrates, but leave doubt as to which is most destructive. They do not indicate that any particular sucrose concentration is more destructive than others. The early demonstration that 15 per cent sucrose produced as much caries as 60 per cent has been extended by recent demonstrations of high caries production at levels of eight and five per cent sucrose. More caries is produced by a breakfast cereal containing 8% sugar than by one containing 40 per cent even although the daily intake of the latter was seven times that of the former²¹. Obviously, other constituents of the cereal were having more influence on caries production than was the sugar content.

FACTORS INFLUENCING THE CARIES PRODUCING EFFECTS OF SUGAR DIETS

While caries is mainly the result of carbohydrates, particularly sugar fermentation on the tooth surface, this relationship is not a simple one. Many factors influence it. Among them must be mentioned that sugar is seldom consumed in a pure state, but almost always with additives of one sort or another, ranging from the flavouring and acidulation of beverages to the multiplicity of components that are included in candies and cakes. The effects of the various additional constituents can according to their nature

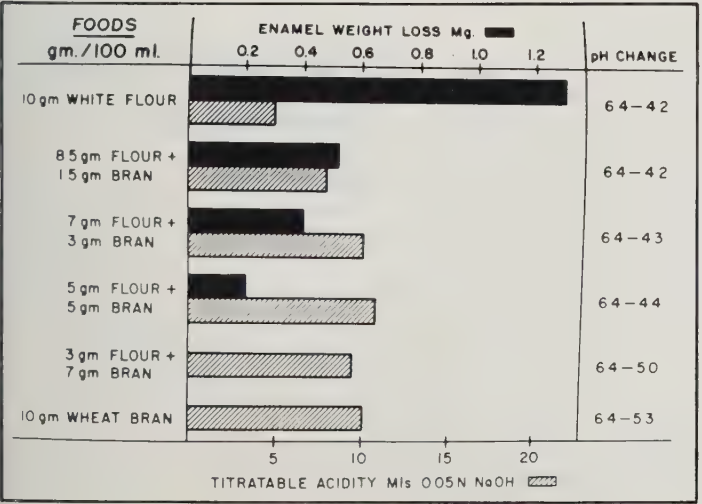


FIGURE 8

either retard or accentuate the caries producing action of their sugar content; such effects could be conferred by other foods eaten at the same time as the sugary ones. At this time, one can go little further than to name those food properties that experimental findings have indicated as having caries modifying effects.

- (a) **Acid buffering and common ion** effects of calcium and phosphorous in foods have been shown to be protective in animal experiments, in *in vitro* caries and in tests on enamel demineralization.
- (b) **Organic substances** such as organic phosphates and proteins, especially casein, will bind to enamel and add to its resistance to acid. Fats and oils may exert a similar effect.
- (c) **Substances that modify the physical nature of foods**, and thereby speed their removal from the mouth. Inclusions of insoluble granular materials such as nuts, or oils, seem to speed food clearance.
- (d) **Flavoring agents** of some sorts, for instance cinnamon, reduce acid production by bacteria, and some such as licorice seem to retard enamel dissolution. Acid which is a basic flavoring constituent of sweet beverages and many hard candies can exert a direct demineralizing effect on tooth enamel. There are some indications that in its early stages this early demineralization can predispose to caries production by other foods.

Indirect effects of food have also to be considered. Theoretically, at least, these could (a) modify the salivary secretions in respect to the above reactions, or (b) modify fermentation processes or plaque formation.

PRACTICAL CONSIDERATIONS

The importance of sugar on caries does not depend

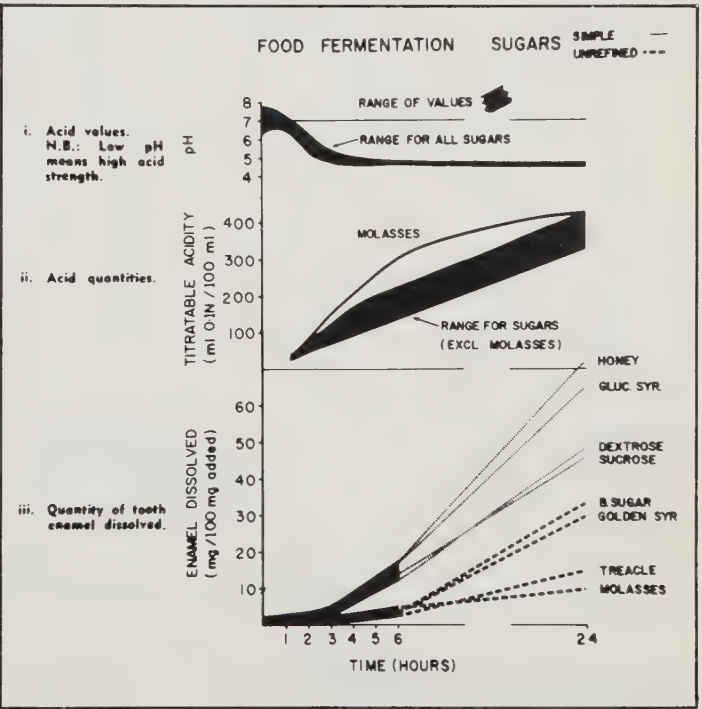


FIGURE 9

upon the quantity eaten, therefore, but rather upon its manner of use in the diet. This gives rise to two questions. One is, how is sugar used in today's foods? The other is, what ways of using sugar will make it more or less cariogenic?

USE OF SUGAR IN TODAY'S FOODS

There is, of course, no complete listing of the major contents of various manufactured and home made foods which are eaten today. Variations occur in foods of the same name by different manufacturers, and even between different lots of the same food. The best information on how sugar is being used today seems to come from statistics compiled by the U.S. Dept. of Agriculture (Figure 11). These show that during 1978, 70 per cent of the sugar sold went into manufactured foods, and thirty per cent was used in other ways. The sugar used by manufacturers went into a variety of products varying from almost pure sugar, as in some candies, to products as diverse as meats and soups. The greatest use of sugar by manufacturers was in

carbonated beverages, the next in bakery products, then came candies and confections closely followed by dairy products. It will surprise many to note that of the sugar used by manufacturers, less goes into candy than starch-containing baked goods, and that the total use in candies is only one quarter of that used in other ways. The manner of use of the sugar that is not sold to manufacturers is not known. Most of it will be used in homes, some by institutions, including the military, and possibly some by small home bakery stores and the like. It is almost certain that more goes into liquids and baked goods than into candy.

THE CARIOGENICITY OF DIFFERENT FOODS

Only recently have any serious efforts been made to measure the caries producing potential, or cariogenicity of foodstuffs. The only agreement there is on this matter is that it is impossible to compare the cariogenicity of foods by means of clinical studies in human subjects. We have probably given more attention to the problem than others, and have suggested that it can best be solved by finding which of a battery of laboratory tests give the best internal agreement, and using one or more of these as indicators of cariogenicity. The following is a listing of the tests which we have used and feel are worth further consideration: Acid Production on Food Fermentation by Oral Bacteria; Enamel Dissolved during Food Fermentation by Oral Bacteria; Food Retained on Teeth After Eating; Acid Formed from Food in Plaque; Caries Produced in Animals; "Caries" Production *in vivo* (Artificial mouth); and Enamel Softening *in vivo* by Foods.

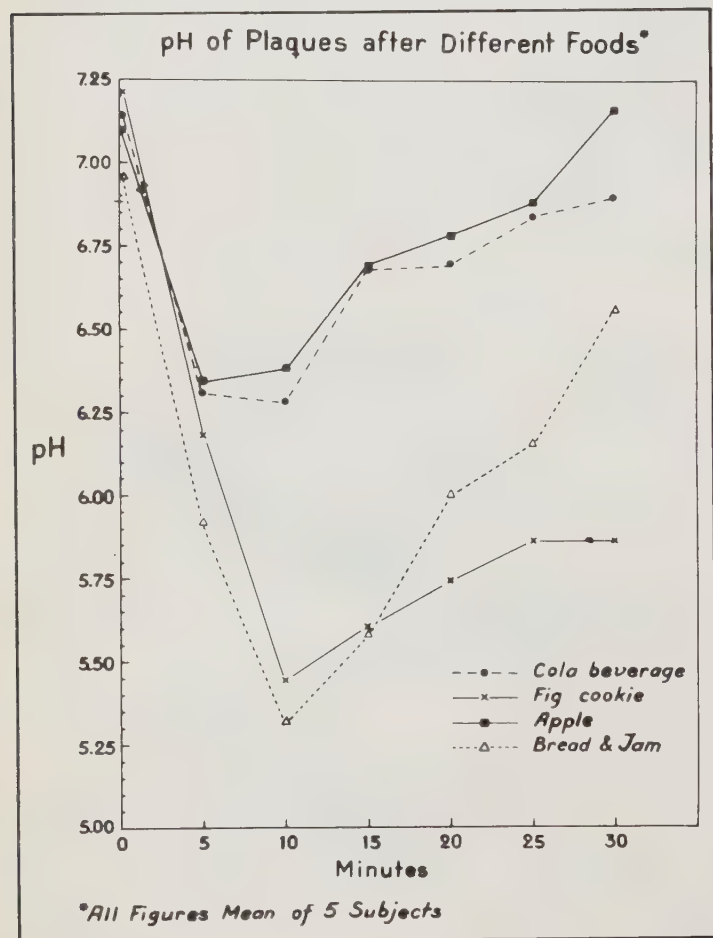


FIGURE 10

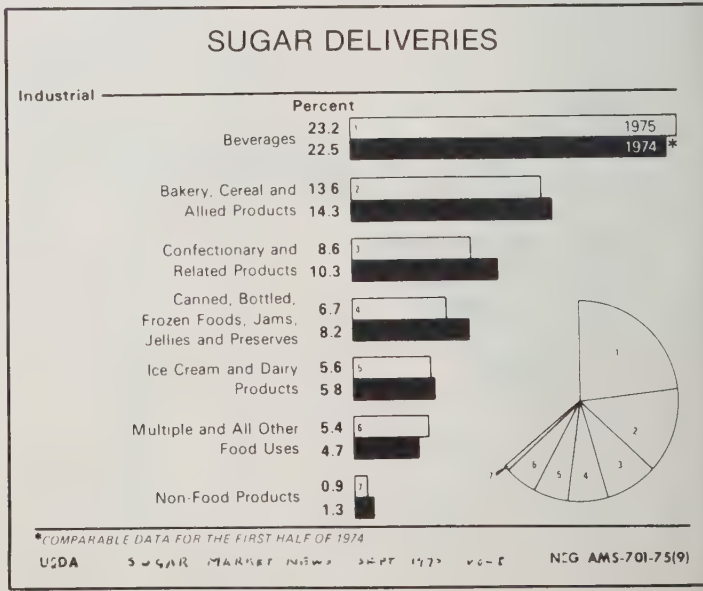


FIGURE 11

DIETARY RECOMMENDATIONS

Dentists should limit the dietary advice they give to patients to information which is pertinent to dental disease. They should avoid making anything but the most general statements regarding nutrition which, as has been pointed out, has little to do with caries. There are two reasons for this policy. The first is that the recommendations which have to be made regarding caries contrast sharply with what patients are likely to hear from teachers, nutritionists, or even physicians. The second is that good salesmen know that success depends upon selling one thing at a time, and that they must avoid confusing their customers (patients) by making two recommendations at the same time. Dentists must sell carbohydrate restriction before they confuse their patients by talking about nutrition.

What dentists have to emphasize above everything else is that sugary or carbohydrate foods should not be eaten except at mealtimes. They should make it clear that in respect to caries, the frequency of eating is more important than the amount of sugary food taken as part of a regular meal. Unfortunately, many people cannot be persuaded to give up between-meal eating because they are under social, managerial, and sometimes medical influences not to do so. The best we can do for them is to tell them that if they must eat between meals, they should choose foods which we believe to be safe for the teeth. These would include nuts, cheese, milk, meats, vegetables, and salty snacks, fruits and sugarless foods. If these people must have some sugar, it is better taken in liquid than semi-solid or dry form.

There are probably carbohydrate foods that are relatively safe for the teeth, but as yet they remain to be identified. The American Dental Association has started a program that is designed to find methods for identifying such foods, but it will probably be some years before any conclusions are reached.

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Implications of dental disease an **economist's** perspective

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From a social or national perspective, money is not a scarce resource or commodity. What ever amount seems necessary can be (and is) printed up in Gerry Bouey's basement.

More interesting is the behaviour of individuals or groups as they go about getting, holding, and spending money or the things of value for which money is exchanged. Thus it is the behavioural response to monetary signals and the results of this behaviour which are subjects of economic study. All such behaviour takes place in a particular institutional framework of rights, obligations, incentives, and penalties. A further important aspect of economics then is the study of such institutional frameworks to see if they encourage individual or group behaviour which has beneficial or harmful effects on society generally. Under what circumstances does individual self-seeking behaviour lead to collective well-being (the benign invisible hand) and what institutional frameworks encourage individual or group behaviour with generally negative collective outcomes? This underlies the policy implications of economic analysis for the modification or preservation of institutions.

GENERAL ECONOMIC PERSPECTIVES

Generally, scarce resources, via production, result in valuable goods and services. Consumer sovereignty characterizes economic systems where preferences of consumers determine what will be produced. But resources, of which the most basic is human time and energy, are never sufficient to produce enough to satisfy all wants. This leads to the necessity of choice, of allocation of resources among alternative uses. This gives rise to the concept of opportunity cost, the real cost of any collection of goods and services produced is the alternative opportunities foregone; the other things which could have been produced with the same resources but were not. It follows that production itself, conversion of

scarce resources into useful and valued commodities, should be as efficient as possible. Use of more resources than necessary in producing a given pattern of goods and services means, from a social point of view, a net loss of the additional goods and services which could have been produced with those wasted resources.

ECONOMIC PERSPECTIVES APPLIED TO HEALTH CARE SERVICES

The production process, converting scarce resources into goods and services, defines health care services as an industry in economic terms. No implication need be drawn about the motivation of those working in health care industries, or about their organizations. The concept of health care industries merely isolates a particular class of productive activities, using distinctive resources and producing distinctive products, from the economy generally.

Unlike the economy generally, however, the goods and services produced in health care industries are not in general valued in themselves. Their direct effects on human well-being are often negative — dentistry being a good example. What users value is the health status improvements which result from the use of health services.

This undercuts the consumer sovereignty concept, because it introduces an objective, or at least external, standard of value, that of efficacy. The possibility exists that users of health services may (frequently do) use and pay for services which have no effect or even harmful effects on their health. If users were fully informed as to the efficacy of the commodities and services they used, this would present no problem. But since they are not so informed, one can no longer infer value of output from consumer willingness to use or pay.

This gap between value and consumer judgement is filled by the development of professions who play an

agency role, making consumption choices on the consumer's behalf. It may also be filled by direct social regulation, or influence, over what is and is not to be consumed. But it is also a feature of health care that a significant proportion of the resources used in production is made up of the skills, time, and energy of particular individuals, professional or otherwise. Skilled time is, of course, a more costly resource than unskilled or less skilled, since it reflects the additional time, energy, and facilities used in training the skilled individual as well as the time spent by the individual in acquiring the skill.

Thus health care creates a serious conflict of interest insofar as the professional entrusted with defining the patient's needs is also the owner of a set of resources (especially skilled time) which can be used to produce services to meet those needs. These resources may have significantly less value in alternative uses.

ECONOMIC PERSPECTIVES APPLIED TO DENTISTRY AND DENTAL DISEASE

The distinction between dental services and oral health status leads to two separate concepts of the cost of dental disease. The cost of producing dental services is the opportunity cost of the resources used up in their production. The cost of dental illness is the negative value which consumer/patients attach to departures from optimal oral health — pain, chewing ability, threat to rest of health, aesthetics. Both constitute costs of dental disease, and must be summed.

Furthermore, dental services are even more than most health services, an investment rather than an item of current consumption. Resources are given up in the present, to reduce the costs (not resource costs, but direct discomfort or dissatisfaction) of illness states in the future. This renders more uncertain the relationship between service and payoff, for both provider and patient.

A balance is always necessary. Since the cost of dental disease has two components, it is inefficient to minimize one alone. Attempting to achieve optimal oral health status, in some ideal sense, may minimize direct costs of ill-health, but maximize costs of treatment in terms of resources given up.

This balance can only be struck by the user, since the judgement of the relative values of oral health and "other things" is *not* a professional judgement. The professional's expertise bears on the efficacy of different services in influencing oral health status, as well as the skills necessary to perform particular services. But the professional has neither special competence, nor right, to try to bias the consumer's choice with respect to ultimate outcomes. Professionals in dentistry may well value oral health more than the general public, but to try to press these values is an exercise in economically

self-interested marketing, not professional advice.

None of the foregoing is affected in principle by insurance. Insurance (public or private) makes nothing "free", and does not change the fact that all care has a resource cost. It may, if it leads consumers to be more willing to accept professional recommendations, raise the total cost of dental servicing. If this is not matched by a corresponding drop in direct costs of ill-health, then it represents inefficient over-servicing.

The balance between service costs and ill-health costs may, of course, be shifted by a technological breakthrough. Discovery of an anti-caries vaccine represents a way of reducing the resource costs necessary to achieve a particular level of oral health. It would reduce significantly the resources of time and skills used up in dental care. The development of the dental nurse is from this perspective precisely parallel to the caries vaccine — the dental nurse involves a reduced input of scarce resources (training time, foregone earnings) to achieve a particular increment of oral health status. On the other hand, most preventive care as presently practised appears to require increases in resource input to yield reductions in disease cost, precisely the normal trade-off. Nor is it clear that the reductions in disease state costs are at all commensurate with the direct resource costs of existing preventive care. The energetic promotion of prevention may well *raise* the total costs of dental disease because it increases the resource costs of services by more than it lowers the direct discomfort, etc. costs of illness.

This points out the tragic conflict of interest inherent in the professional role. Dentists own the resources of skills and time which are used to produce dental services. These resources are their principal form of wealth,

L'ASSURANCE DENTAIRE

L'assurance (de l'État ou d'une compagnie privée) n'équivaut pas à la gratuité: le coût des soins doit être absorbé d'une façon ou d'une autre. Si le fait d'être protégé par une assurance incite les gens à suivre les conseils des spécialistes, il pourrait en résulter une hausse des dépenses totales occasionnées par les soins dentaires. Si cette hausse n'est pas contrebalancée par une diminution correspondante des coûts directs de la maladie, nous créons un déséquilibre causé par un abus des services des dentistes. L'auteur de cet exposé, le Dr Robert Evans, est professeur associé au département d'économie de l'Université de la Colombie-Britannique.

at least early in their careers. Thus any technical breakthrough which *lowers* the resource costs to society of coping with dental disease also lowers the value of these resources and the wealth of their owners. Both the technological developments above, dental nurses and caries vaccine, make society better off by lowering the resource costs of attaining oral health, but make dentists as an economic group worse off. On the other hand, conventional preventive techniques and frequent checkups *increase* the cost of dental illness to society as a whole but improve the market for resources owned by dentists. Thus preventive care is strongly encouraged by dentists — marketing — while dental nurses are energetically resisted. Caries vaccine, if it ever fulfills its promise, will create a very interesting economic problem for dentists.

The conflict of interest is not always resolved in favour of economic self-interest by the professional; community water fluoridation is an excellent example of a technological breakthrough strongly supported by dentists. But it is apparently the case that even in fluoridated communities "preventive" care of dubious efficacy continues to be supplied. Would caries-immune patients still be sold prophylaxis and topical fluoride? It appears that in this case the professional may be encouraging the patient to use any services which have even a very small probability of improving oral health status, thus raising total costs of disease. It is clear who profits from this substitution of professional for patient values in the trade-off between costs of illness and costs of care.

ECONOMIC PERSPECTIVES APPLIED TO CHILDREN

From an economic perspective, children's dentistry has two important distinguishing characteristics. The investment aspect of dental care is more pronounced, as care provided to the child may have a longer and more significant impact on later oral health. Secondly, the appropriate source of the values to be used in establishing a trade-off between costs of service and costs of illness is more open to question.

The investment aspect of children's dental care arises from the fact that children are more caries-prone than adults, and that a decayed and restored tooth is more likely to redecay in later life than a sound tooth. Furthermore, tooth loss at an early stage in growth and development may lead to faults in the development of either teeth or of the dental arch which are more serious than in later life. Thus there may be a particular case for providing care to children in order to prevent future disease.

As an investment argument, this position rests on the belief that service requirements will be smaller if care begins earlier. Unfortunately, the argument appears to rest more on conjecture than on evidence. It may yet be true, but is far from proven. It is equally possible that less intensive children's care followed by treat-

ment where necessary in later life may be a more efficient approach.

The investment argument or case for children's care shades into one which has parallels to marketing. Early and positive contact with the dental care system may habituate children to care and cause them and their parents to put a high value on oral health, relative to its opportunity costs. Professionals may regard this as a desirable result, since they already place a high value on oral health and presumably believe, sincerely, that everyone else should too. The analytic difficulty, though, is that the same statement is probably true of those who sell male cosmetics. If an important objective of children's dental care is to influence attitudes towards oral health so as to make people more willing to purchase dental care, that is a form of marketing and the self-interest aspect of such marketing should not be ignored.

This leads to the second major feature of children's care. It was stressed above that the recipient of care is the only proper judge of how valuable oral health is to him/her, relative to other things, though the professional has special expertise in how oral health may be attained. For children, this statement does not hold. The consumption decisions of the child are made by the parent, and the parent may purchase insufficient care for the child in the sense that the child, when grown, may look backwards and wish that more had been spent. The parent may establish the wrong trade-off between service cost and disease cost. Hence, there may be a need for some sort of public intervention to re-balance this trade-off.

It is not obvious that the dentist is the appropriate source of such alternative values. If the parent may be biased toward underuse of care, the professional is biased both in training and by economic interest toward oversupply. Minimizing the cost of disease at whatever cost of service is just as inefficient for children as for adults. Thus children's dentistry raises the thorny question, if parent choices are not satisfactory, whose are?

Finally, it should be noted that if there is such an underuse bias among parents, it is not uniform. Some parents, particularly upper socio-economic group members, purchase extensive quantities of dental services for their children. Other use little or none. Thus any public intervention to improve children's care must focus on raising use among the current non-users. A general stimulus or one which benefits principally the current users will be counter-productive.

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Implications of dental disease a **sociologist's** perspective

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The importance of being beautiful apparently is a value held by many groups of people world-wide and presumably physical appearance has a strong effect on people's behavior. It has been suggested that facial appearance more than appearance of other parts of the human anatomy may be important behaviour. Those who do social research in the dental field have been concerned about specifically documenting the relationships between dental appearance and people's behaviour.

Think for a moment about a woman wearing eyeglasses. The wearing of glasses has been found to in-

fluence ratings of IQ... as well, as attractiveness. Hamid noted that attractiveness ratings were low but another researcher, Argle, noted that women wearing glasses seen on film were rated higher on intelligence than were those not wearing glasses. This was so at least when the exposure was for 15 seconds. But when the exposure was for five minutes, during a leisurely conversation, glasses had no effect on IQ judgments.¹

Experiments carried out by Sigall in the U.S. found that attractiveness of a defendant had a significant impact upon jurors' decision about the length of sentence given.² Both of these examples document that appearance can have an effect on personal assessment or on societal action. This paper will focus on dental morbidity and appearance to explore both psychological and social consequences.

Morbidity or illness has social as well as biological consequences. Dental morbidity often represents a series of chronically occurring events that may disrupt social relationships, events that somehow must be fitted into personal life patterns. The beliefs, values and certainly the behaviors of these victims or patients must be known before one can understand the ways to cope with the social disruptions in their everyday lives.

It is important to know the characteristics of the problem faced by society, its magnitude and distribution in terms of social disruption. It is important, in my view, to know what that social disruption means before intervention strategies such as prevention and treatment can be effectively imposed on the situation. How is society's social burden reduced, if providers and payers of care intervene? What are the social costs associated with intervention? How do these costs compare to the social costs of ignoring dental morbidity? These are the questions which are relevant to concerns expressed in this symposium because the answers, while not very clear, suggest a direction to follow and perhaps some

LES INDICES DENTAIRES-SOCIAUX

Selon le ministère de la santé, de l'éducation et du bien-être des États-Unis, affirme le Dr Lois Cohen, adjointe spéciale au directeur de l'Institut national de la recherche dentaire de ce ministère, un indice social est une statistique d'un intérêt normatif direct qui facilite l'établissement rapide d'opinions complètes et équilibrées quant à l'état de grands secteurs de la société. Les indices dentaires sociaux dont il est question... faciliteraient les décisions en matière de politiques de santé dentaire en fournissant des points de repère nous révélant l'état de santé de la société et en mettant en évidence les dégâts causés au fonctionnement de la société par les maladies dentaires. Sans les données que procurent ces indices, les responsables de la santé dentaire continueront de fonder leurs raisonnements sur des opinions subjectives et des hypothèses.

sense of priorities among methods for improving children's oral health.

PSYCHOLOGICAL HEALTH

Literature on psychological factors associated with oral diseases is sparse and concerned primarily with dental pain, psychological factors associated with malocclusions and other craniofacial abnormalities, and reactions to loss of teeth and adjustment to dentures. It is interesting to note that there is no literature which describes the effect of oral diseases or conditions on the psychologic state of individuals — that is — their emotional health. Yet many harbor preconceived notions that dentistry enhances self-esteem — body-image — esthetics and the like and consequently concern themselves with the propriety of dental treatment for these reasons. But these reasons must be recognized as subjective value-judgments until that day when the interrelationships between oral conditions and emotional health are able to be measured.

For instance, an important psychologic experience associated with dental disease is pain. Yet no data exist which quantify the magnitude of the problem in any population or how it affects an individual's ability to function. Miller and Swallow³ in the United Kingdom conducted one study on patients at a teaching hospital who reported having toothaches. They inferred from these data that 5 million days of dental pain occur every year in the United Kingdom. Another study by Miller in South Wales reports three day's pain per person per year in a sample of 439 adults.⁴ It appears there are no other attempts to document the "dental pain problem" and what it means in terms of emotional health or social functioning. We continue to say that dental pain is to be avoided. But we do not know what the cost to society really is. Possibly the "pain problem" might be exaggerated because so few bother to research it. Alternatively, would it not be helpful to have such documentation in order to garner private and public resources to avoid or prevent dental pain?

The literature on psychological factors associated with craniofacial abnormalities is filled with case studies demonstrating that improvements in emotional health follow surgery and orthodontic correction. But evidence gathered through rigorously designed research is lacking. The literature reveals no consistent relationship between self-evaluation of dental appearance and emotional health.^{5,6} Some years ago a pilot study was conducted to compare children's perceptions about the arrangement of their teeth with clinical orthodontic assessments.⁷ There was very little agreement between the two sets of independent judgments. A related study at the University of Wales in Cardiff indicates that a difference of perceptions exists between orthodontic and lay groups.⁸ In a study of 18 year old Swedish men, only

four percent of the individuals thought they needed orthodontic treatment although as many as 60 percent were judged by the orthodontist to be in need of such treatment, and in half of these individuals the need was viewed as considerable.⁹

Epidemiological studies of clinical judgments of malocclusion suggest that anywhere from 10 to more than 90 percent of a population is in need of treatment.¹⁰ Clinical practice depends in part on the assumption that orthodontic intervention will improve anatomical relationships and in part that improvements will occur for an individual's emotional status. Yet research to characterize the nature and size of the "orthodontic problem", if there is one, in terms of emotional health, is fragmentary. A fuller discussion of these issues by a psychologist has appeared in the dental literature.⁵

If evidence of the scope and nature of the orthodontic problem was found, could society muster sufficient resources to avoid, prevent or correct the consequences of these conditions to benefit emotional health of a segment of the population? New research is being initiated on this question.

Albino and colleagues working in Buffalo are seeking evidence about relationships between the severity of various occlusal states and people's behaviour. Their preliminary findings indicate that a consistent pattern of preference exists among family members, regardless of whether or not they plan any treatment. Midline deviations, mandibular protrusion, and open-bite were consistently perceived as less severely unattractive than maxillary and bimaxillary protrusion, excess spacing and crowding which were perceived as being relatively severe conditions.¹¹ Comparisons of professional and adult public assessments suggested significant similarities between the two assessments as measured by the Treatment Priority Index, photographic ratings and self-perception ratings, though children's perceptions of their own malocclusion are not correlated with professional evaluations of malocclusion.¹² The group also studied factors associated with the desire for orthodontic treatment in a search for clues about the impact on psychological or social functioning. Parents appear to seek treatment for their children. They display and impart positive ideas about braces and the importance of occlusion. This study reaffirms earlier reports by Baldwin and Barnes about the significance of parental (particularly the mother's) values in help-seeking behavior.^{13,14,15} The impact, if any, of occlusal arrangement on psychological or social functioning is still unknown but Albino and her colleagues and the Baldwin-Barnes team have made a start with their research efforts. Probably longitudinal studies are needed to track both treated and untreated individuals over the course of their developmental years to assess any "disruptive" effect attributable to malocclusion. While this research

would be costly, it may be necessary if public monies are to be spent for extended periods on orthodontic therapy or preventive interventions.

The literature on psychological factors associated with need for and acceptance of dentures presents an intriguing paradox. Generally satisfaction with dentures seems to be related to ease of chewing, eating, speaking and esthetic considerations. But clinical judgments of the fit of dentures seem to be poorly correlated with patient satisfaction. Bulman et. al. in the United Kingdom demonstrated that only 11 percent of the full denture wearers in their study were dissatisfied even though 64 per cent of the full dentures seen by examiners in one town and 40 percent of those seen in another town were classified as fitting poorly.¹⁶ Many denture wearers, like many with malocclusion problems, adapt and function without seeking remedy for their problems. This type of finding suggests the possibility of thresholds of tolerance beyond which help is sought to ameliorate the problem. But there are little research data to document what that threshold might be for different kinds of patients. Conceivably, factors such as social status and awareness that treatment may be available, accessible and acceptable may affect thresholds for help-seeking behavior.

SOCIAL RELATIONSHIPS

The literature on behaviours which relate to our ability to optimally perform social roles is very sparse.

A study made in India reports a statistically significant association between the number of dental defects and academic performance among 568 school girls, 9-24 years of age in an urban area.¹⁷ Recent data from the National Center for Health Statistics in the U.S. show that in 1975, days of bed-ridden disability attributable to dental conditions were 4.4 per 100 persons per year. However, more appropriate social indicators of socially disruptive behavior may come from measuring how much time is lost from school or work because of dental problems.¹⁸ Unpublished data for the 1976 National Health Survey indicates that 5.6 million days were lost from work because of dental conditions. It is not known whether these data consider both morbidity-related reasons and preventive or treatment visits. Information from the U.K. for the year ending May 1975 indicates that there were 743,000 days of certified incapacity from work, where the cause of the incapacity was a disease of the oral cavity.¹⁹ A new research project to be initiated at the University of Connecticut is specifically designed to follow a cohort of employees to determine both the incidence of dentally-related work loss, to classify the characteristics of this work loss and to define factors associated with this work loss.

A Canadian study compared exemptions from normal tasks at home and at work expected from medical and dental problems. Medical problems included ulcers,

migraines, heart conditions, arthritis and mumps. Dental problems were necrotizing ulcerative gingivitis and extractions of third molars. The author noted that dental caries was not selected as a problem because it was not severe enough to interrupt the normal routine of living and, therefore, he assumed that the sick-role concept was not relevant. He concluded that "sick-role" exemptions from normal tasks were more frequent for medical than for dental problems across all social classes.²⁰ This investigator further reports that differential rates of work loss can be explained by class differences in expectations about sick leave; lower class workers expect greater exemptions from work role requirements than do higher social class workers.²¹

Using the orthodontic example, Rutzen compared 252 treated persons with 67 untreated persons about five years after treatment. He looked at measures of occupational rank, social class, educational level, dating, engagement and marriage and personal esteem and found low levels of statistically significant differences.²² It may be that malocclusion is seldom used as a basis for social discrimination. Or compensatory behavior may ensure, that is people compensate for deficiencies in one area by over-achieving in other areas. It is also conceivable that the indicators of social functioning were not sensitive enough to pick up actual differences.

Linn's study of the social meaning of dental appearance has been cited frequently to reinforce the idea that dental appearance is relevant in social situations.²³ He analyzed data on adults randomly selected from across the United States. While the respondents reported that dental appearance was important in making friends, running for public office, getting a job and dating among young people, more than one-third of these questioned had uncorrected and highly visible dental defects and only about one-fourth of these seemed self-conscious about the defect.

IMPLICATIONS

Although literature on psychological and social costs of oral conditions is sparse, it cannot necessarily be concluded that such problems have no effects on socially relevant behaviours of individuals and population groups. Behavioural and social scientists working in the field of dental research are striving to measure performance, feelings, and symptoms in areas such as daily work including household chores and schoolwork, absenteeism and decrease in productivity. They also grapple with measuring changes in sleep and rest, physical mobility, eating, speaking, recreational activity, mental functioning and social interactions. The task is formidable to be sure — but the cost of not doing such research may be wastage of society's precious few resources in the name of enhancing oral well-being.

Behavioural and social scientists in the dental field are reviewing existing epidemiologic and treatment

indices for their potential to measure social functioning. For example, can measures such as Decayed, Missing and Filled Index (DMF), the Oral Hygiene Index (OHI), or indices representing composites of oral conditions such as the Index of Dental Need or a National Dental Health Index developed by the Canadian Dental Association be used to profile individuals with various levels of "social or psychological functioning" attributable to dental conditions? Cohen and Jago, and Nikias have prepared reviews of the literature but the measures discussed have yet to be fully explored under experimental conditions to see whether they are predictive of specific types of behaviour.^{24,25}

Just as indicators of time, season, weather or gross national product are needed, indicators of the changes that characterize our health are also needed. Nothing constructive may result from what is learned but perhaps some things now done in some areas of clinical dentistry ought not to be done. Many oral conditions are of our own making and subject to routine decisions made during daily life. The need to monitor the social consequences of these oral-health related actions — how they disrupt or do not disrupt social activity — not just that they disturb the esthetic sensibility of some health providers — but how the actions affect lifestyle and societal activity — that need is the reason, I believe, for developing indicators of dental conditions that affect social life. According to the U.S. Department of Health, Education and Welfare, a social indicator is a statistic of direct normative interest that facilitates concise, comprehensive and balanced judgments about the condition of major aspects of a society.²⁶ The social dental indicators discussed above would facilitate making policy decisions for dental health by providing guideposts to tell how well or how sick society is and which aspects of that dental morbidity damage our societal functioning. Without the information which these indicators could yield, those who work toward oral health will continue to base their arguments on subjective judgments and assumptions.

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ACKNOWLEDGEMENTS: Thanks to Mata K. Nikias and to Aubrey Sheiham for providing many useful references and to other members of the Committee on Socio-dental Indicators, Behavioral Scientists in Dental Research for their inspiration.

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International Year of the child dental perspectives

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The right to health implies that human beings of all ages should have access to adequate health services. The International Year of the Child has provided an opportunity to assess how much past efforts have contributed to health. Children have always been at the centre of our preoccupations and no one would think of any change in this regard. The burdens of our society are constantly increasing, however, and new needs are arising due to the steady increase in population. The effect of such changes could be minimized, if the health services extended to and specialized for children were more effective and were more prevention-oriented.

The dental profession has not been remarkable for its social sensitivity according to many observers but can nevertheless be proud of its very special preoccupation with children. Dentistry, as medicine and pharmacy, is a system of knowledge based on the etiology, diagnosis

and treatment of dental and oral diseases. Dental knowledge is divided in several subdivisions such as periodontology, restorative dentistry, surgery etc., with the exception of pedodontics which is a subdivision of this body of knowledge identified by the recipient of the care and not by the site of treatment or the nature of the techniques. The model already had a predecessor in the medical speciality of pediatrics, but the results have been no less valuable and children have been without doubt the true beneficiaries of this very specific difference.

It is unfortunate that the dental knowledge and services especially developed for the child have not been better understood by the different levels of the society. For instance, in this part of the country, a structure named "The Council of the Family" was established in 1970 to advise the government. From what is known of its activities, it has never formulated a recommendation on dental care. Yet the dental health of the children of Quebec is known to be the worst in Canada and that the Quebec dental plan is unevenly utilized due to an unbalanced dentist distribution. In such a situation can a dental program be expected to reach its goals when groups designated to apply pressure remain apathetic? The New Zealand experience has produced the paradoxical result of providing the most comprehensive child dental services and one of the highest rates of early denture wearers. The Quebec children's dental plan, however, which is quite different in its characteristics from the New Zealand plan, will not lead to similar results. Nevertheless, the expectations of this program will not be met in due time, and many reasons for the delay have been identified by the preceding papers.

LES PROBLÈMES SOCIAUX

Selon de nombreux observateurs, la profession dentaire ne s'est pas distinguée par sa sensibilité aux problèmes sociaux, mais elle peut néanmoins être fière de sa préoccupation particulière envers les enfants . . . Le professionnel de la santé a maintenant atteint un point tournant où il doit s'adapter à la situation dans le cadre de laquelle le patient participera de plus en plus au choix des traitements et à la détermination des priorités quant aux mesures de santé qui doivent être appuyées financièrement. Tels sont les propos du Dr Jean-Paul Lussier, ancien doyen de la Faculté de médecine dentaire de l'Université de Montréal.

STATUS OF ORAL HEALTH

A turning point has now been reached where the health professional has to adjust to a situation in which the patient will participate more and more in the selec-

tion of treatments and determine the priorities among the health measures to be financially supported. The criteria set by the dentist to evaluate oral health are based on an idealistic approach whereas the patient proceeds from an opposite direction. The dentist aims at the elimination of all defects, the patient wants comfort at low cost. This position of the dentist will not change for at least as long as he applies the principles that he was taught. Today's dental education has not succeeded to establish strongly in the minds of the dentists that there are values beyond and above the attainment of scientific knowledge and technical expertise. This may explain why dentists find satisfaction and security in what they do as "doers", and doers of the highest caliber. The two following quotations can help to indicate the distance between the dentist and the patient.

Dummett¹ quoted section 2 of the principle of ethics of the ADA: "The dentist's primary duty of serving the public is discharged by giving the highest type of service of which he is capable and by avoiding any conduct which leads to a lowering of esteem of the profession of which he is a member" and Dummett paraphrased: "The implication is clear that anything contrary to the highest type of service is a disservice to the patient and therefore should not be rendered. It would be unethical to accomplish for patients that which the private practitioner would not in ordinary circumstances condone either for himself or his family".

Friedman's² statement exemplifies another way of thinking: "Health service is no less an industry than the automobile industry or the agricultural industry or the clothing industry. What it is trained to produce in goods and services, it must sell. But it has a unique advantage over most other industries in that the consumer does not really know what goods or services he wants to buy, what is being offered or how to compare them with similar offerings by other sellers. He cannot even judge his needs, much less the quality of the services he receives."

Several attempts were made by professional organizations or by individual members of the profession to neutralize consumer activism, (e.g. books such as: "Save your teeth and your money"³, "Dentistry and its victims"⁴, "Dental care for everyone"⁵ are good examples of the good will and effort on the professional side) but this is expected to have minimal effect to narrow the gap between the two positions. There is a necessity, therefore, to endorse the WHO approach, i.e. a multidisciplinary approach to assess general health and to apply it to oral health so that the goals of dentistry be properly understood by all parties interested and the disease attacks be subdued with the available resources.

A global survey of dental disease shows a high prevalence of dental caries in the industrialized coun-

tries (unless they benefit from water fluoridation and fluoride programs) and a low prevalence in developing countries with a tendency to increase as urbanization progresses. Periodontal disease by contrast demonstrates a generally high prevalence with a tendency to lower levels in industrialized countries. To cope with these disease problems, "integrated planning" at the national level is necessary to ensure that all efforts are most effective compared with the way existing programs have been implemented up to now. With today's estimates of eight DMF teeth for the 12 year olds in industrialized countries and three in developing countries and a moderate periodontal disease prevalence, the global oral health perspective for the next couple of decades is to lower DMFT from eight to three in the first case and maintain 3 in the second case, and to bring the periodontal diseases to a low prevalence during that period. The required personnel would appear to be numerically within the reach of possibilities. The major obstacle is in the distribution of this personnel since the industrialized countries, with their plethora of dentists, will need much less and the developing countries considerably more as the preventive effects take place and programs expand. Where preventive procedures are fully applied, the dental manpower could be reduced by a large factor in a relatively short time.

In reviewing the oral health status of North American children, some real improvements over the past few decades are evident. For instance, the low prevalence of oral pain and near emergencies (Quebec being the exception), the infrequent occurrence of advanced periodontal disease, a reduction of dental caries in the deciduous teeth, according to the def teeth index of school entering age children, and a tooth loss rate of less than 0.2 in young adolescents. Also 60 to 75 per cent of North American children are consumers of dental services judging by the 13-14 year old population. There are, however, several matters of concern or at least of disillusion; mainly, the extreme variations in oral health status accountable to geographical, economical and educational differences, the prevalence of gingivitis to the extent of 90 per cent among the teenage population and the persisting caries experience in the permanent dentition which seems to remain stationary year after year, in spite of some rewarding results in areas like Ontario. Epidemiological studies on Quebec children are most revealing and the shocking results exposed should have a striking impact on future planning.

ETIOLOGY OF ORAL DISEASE

The delicate equilibrium between the elements of the protective mechanisms present in the mouth can be easily overturned by biochemical dietary and microbial influences of the carious process. There is no doubt that

tooth dissolution is part of the caries process but the question remains open as to which agent is the key factor in acid production and should be more specifically the point of attack in a strategy to overcome dental caries. Other approaches to achieve control of the microbial flora and composition of the dental plaque include nitrogenous substances and some peptides in particular, which can originate from the saliva, are raising hope as possible media to act effectively in the control of plaque pH. So far the increased resistance of tooth enamel by fluoride incorporation still remains the major accomplishment in this area of research.

Microorganisms are the etiological factors of periodontal diseases, although the microflora is diverse and changes in composition according to the site or stage of the disease. Periodontal diseases are infections and the usual manifestations of periodontal disease do not appear in the absence of bacteria, even when predisposing factors such as malocclusion or systemic deficiencies are present. The tissue damage produced by the microorganisms are imputable to their enzymes and metabolites which cause cytotoxic effects in the tissues supporting the tooth. Microbial cells and by-products provoke defensive reactions by host cells, which appear to be noxious to the bony structures and thus enhance periodontal breakdown.

In examining the list of syndromes and afflictions of childhood where pathological signs appear in the periodontium, the apparent high sensitivity of its tissues to systemic factors tend to decline after puberty. By contrast, the local factors have less impact, their effects are reversible and appear as soft tissue enlargements rather than bone loss. Nevertheless, by instilling early in life the proper motivation towards preventive procedures, it is possible to protect the adult against plaque-evoked gingivitis.

In North America, orthodontic treatment is slowly finding its way into private dental programs but it may be a long time before it is covered in government-sponsored programs, mainly because of the difficulty in deciding who should receive treatment. Anthropological studies have recently shown a lack of vigorous masticatory function and dental attrition are responsible for a high proportion of the prevalent traits of malocclusion in modern Caucasian society. However, their conclusions suggest that it will be difficult to apply specific preventive public health measures to this problem.

Treatment is thus unavoidable and should be properly evaluated to distinguish from among the plethora of cases those which present occlusal conditions or handi-

caps most in need of treatment. The goal should be the well-being of the child, as a child and future adult, rather than providing care directed towards the attainment of classical orthodontic norms.

STATE OF THE ART OF PREVENTION

Antifluoridation activism has constantly gained in aggressiveness and effectiveness in frightening people. The ADA Council of Dental Health devoted a part of its annual Conference in 1978 to stimulate the interest of the leaders of the profession in water fluoridation and rebuild confidence in this unequalled preventive measure. It would indeed be deplorable if the benefits of water fluoridation, so widespread in some countries, could not be extended to a larger proportion of the population. The misleading and unfounded claims of anti-fluoridationists are troublesome but the apathy and ignorance of people in key positions is also a matter of concern. The province of Quebec is one of the worst cases with respect to the promotion of water fluoridation. Quebec is last among the Canadian provinces and territories with only 14.4 per cent of its population receiving fluoridated water. Among the largest North-American cities, two have not yet succeeded in providing their citizens with fluoridated water: Los Angeles and Montreal.

If the city of Montreal had water fluoridation, the percentage of Quebec would be raised to nearly 60 per cent. In Montreal, one anti-fluoridationist has stalled the operation for more than 20 years. The mayor of that city opposed fluoridation right from the start of his political career and has been long enough in power to make a perfect demonstration of his stubbornness. Most successful with his spectacular projects (Expo '67, and the Olympic Games of 1976, to name only the most famous), Mr. Drapeau was prompted to attract big investments and great world events rather than promote health measures and save the money of the ordinary citizens. Had the latter been his goal, during the 20 odd years he was in office, according to the cost-benefit ratio of 1/50, he could have saved approximately \$500 million in dental services rendered or needed, twice as much as the share that Montrealers must pay to cover the Olympic Games deficit.

Applications of sodium or stannous fluorides or, preferably, acidulated phosphate fluoride may decrease the incidence of dental caries by 40 per cent on children living in non-fluoridated areas. The general use of topical applications in fluoridated areas is still debatable,

Health services are not valued for themselves but only for the benefits they may generate now or later.

however, although it is still recommended for children with high caries susceptibility. Generally further efforts are required to develop and advocate methods for the self-application of fluorides.

Plaque control is closely dependent on the quality and continuity of home care, yet many of the positive advantages of tooth brushing and flossing require scientific documentation. This does not imply that oral hygiene goals should be minimized as mechanical means of oral hygiene control remains the only way to prevent gingivitis even if only slight protection is provided. Nevertheless, too large a proportion of the distributed materials for the use of the toothbrush is far from adequate. Toothbrushes need to be adapted to the requirements of young users. Moreover, the profession still remains inconsistent in providing toothbrushing instruction. The general consensus holds that the scrub toothbrushing method is preferable for young children, but they require assistance and supervision for a number of years.

Combinations of dietary components, such as white flour and sucrose, appear to be more cariogenic than sucrose alone. This may be related to the way in which and the extent to which sugar is used today, where its use in bakery and processed foods has increased considerably. In addition to the frequency of eating, the rate of clearance of food from the mouth after eating, the texture of the food and the physical state of sucrose whether it is in a liquid or solid form are important. Clinical findings consistently show that the incidence of caries is greater when the frequency of eating is higher, when the clearance of food is slower, when the food is stickier and when sucrose is present in a solid form.

Some of these findings presented in the Symposium are unexpected. For instance, acid production is not always consistent with the amount of substrate present. The combination of dietary components such as white flour and sucrose appears to be more cariogenic than sucrose alone. Care should be exerted in interpreting these results however as there are a multiplicity of variables in nutritional studies in experimental animals and even more so in human beings. A considerable amount of facts have been accumulated which show that sucrose consumption should not be deemphasized at this time as the main dietary factor related to dental caries¹¹.

Two practical situations have recently grown in importance: (a) The way in which and the extent to which sugar is used today. Its use in bakery and processed foods has increased considerably; and (b) The possibility of assessing the cariogenicity of foods. Some laboratory tests could be applied to a larger extent so that foods

could be rated according to their cariogenicity. There is no doubt that the cariogenicity of different foods varies considerably.

Dentists should continue to emphasize strongly carbohydrate restriction but are advised to avoid becoming involved in dietary counselling where there is a risk of conflict with other professionals such as teachers, nutritionists and physicians. To this end, although dietary goals, independently set by the governments of Canada and U.S.A., are not aiming directly at the reduction of dental caries, they could have some influence as they include a reduction of high sucrose containing foods by 50 and 45% respectively, through the implementation of measures such as the use of fruits, vegetables and whole grains and the consumption of water in preference to sweet drinks to help to decrease the mortality and morbidity rate of nutritional degenerative diseases.

SOCIO-ECONOMIC IMPLICATIONS OF ORAL DISEASE

Health services are not valued for themselves, but only for the benefits that they may generate now or later. In addition conflicts of interest are created by the fact that the health professionals are inserted between the product and the consumer and that they influence the consumer according to their biases. Their advice loses its objectivity and becomes a marketing element which stimulates more service sophistication and corresponding cost increases.

The profession must, therefore, exercise responsibility to children as a determinant factor in the self-propagation of the system and its inherent distortions. Proceeding in the promotion of prevention, the sensitive equilibrium between the scarce resources and the services may be influenced in a way to make the services still more expensive. The net result is disappointing from the economic standpoint as dental programs are of questionable effectiveness and highly expensive.

Little has yet to be achieved to establish dependable social indicators of dental services and in many instances concepts and figures are considered which have not been fully tested. This is particularly relevant when considering Canada's partially edentulous hockey stars, who make the male teenagers burst with cheers with their ultrafast stickhandling and skating, including their crenellated smiles.

The search of social indicators are vitally important in the planning of dental services, particularly in rela-

Achievements in dental and public health research have progressed to the point where dental caries can theoretically be eliminated . . .

tion to what they can bring to the improvement of the quality of life. The restoration of the values, which have been at the basis of true professionalism, will be made possible only if the existing and future professionals decide to become more attentive to the real needs of those they are called to serve.⁶

During the last decade, achievements in dental and public health research have progressed to the point where dental caries can theoretically be eliminated and periodontal diseases largely prevented in individuals who will submit themselves to a rigid continuous discipline. This does not mean that the end of the road in this direction has been reached. Progress must also be made in another direction, however, in order to disseminate the good news in such a way that the public will accept it with enthusiasm. Recent figures indicate that preventive services have definitely been integrated into the practice of dentistry. In 1977, preventive dental services in U.S.A. cost 769 million dollars, representing 8% of the total spending on office-based dental services⁷ and in Quebec 37% of 31 million dollars paid by the Health Insurance Board to the practising dentists covered exclusively preventive services to children up to 12 years of age.⁸

Since the practice of prevention is more a personal than professional matter, however, all these efforts must now be conjugated to enable each citizen to have his full share of oral health. Different attitudes must be developed, new reflexes must be conditioned. This is education. This undertaking involves a large-scale operation towards the public and also a reassessment of professional behaviour.

In 1976, 19 health professionals⁵ joined to study the factors responsible for the "discontinuity" i.e. the "the absence of reciprocal relationship between practice and education, and between education of health professionals as mediated through practice, and the health of the American people". Their study led them to six recommendations directed to areas of research to alleviate these discontinuities of which two are most pertinent: (a) "Research should address the inadequate attention to preventive oral health measures in dental education and professional practice and by the public. This theme assumes that the nation's health in the future will be critically affected by nutrition, environment, measures to prevent disease, and a sense of personal responsibility. Research should raise questions about who is responsible for educating the public about oral health and whom the public will accept as educators"; and (b) "Research must provide a better understanding of how health servi-

ces research can influence changes in education, practice, health status and relief from discomfort, and must also provide an answer to this question: What accounts for the antagonism or indifference to health services research among influential members of educator and practitioner groups in the health professions?"

These two recommendations open very wide research perspectives. However, "The delivery of dental health care is not now, if it ever was, solely a problem for the dental profession. Real solutions must be found in the unselfish collaboration of dentists, the other health professions, the dental auxiliaries, social and behavioral scientists, epidemiologists, educators, statisticians, government and public health officials, consumers, and a host of others. There are enough problems to challenge and plague us all".¹⁰

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Announcements

We urge readers to confirm meeting dates with the contact listed with each announcement.

Lang, 5253 Décarie, Suite 210, Montreal, P.Q. H3W 3C3.

Education Congress, Davos, Switzerland, February 18-29, 1980. Contact: Jennifer Sherwen, Swissair, Montreal (514) 879-1330 Helga MacGregor, Swissair, Toronto (416) 960-1100.

Canada

Canadian Dental Association, 1980 National Convention, Halifax, Nova Scotia, July 13-16, 1980. Contact: Dr. T.D. Ingham, Nova Scotia Dental Association, P.O. Box 604, Halifax, N.S. B3J 2R7.

L'Association Dentaire Canadienne, Congrès national 1980, Halifax, Nouvelle-Écosse, 13-16 juillet 1980. Pour renseignements: Dr T.D. Ingham, Association Dentaire de la Nouvelle-Écosse, B.P. 604, Halifax, N.-É. B3J 2R7.

February

First Ever Yukon Dental Convention, Whitehorse, Yukon Territory, to be held in conjunction with Rendezvous, February 22-23, 1980. Contact: Dr. R. Pearson, 309 Wood St., Whitehorse, Yukon Territory.

April

Ontario Dental Association 113th Annual Spring Meeting. The Sheraton Centre, Toronto, Ontario, April 27-30, 1980. Contact: Mrs. W.C. Durham, 234 St. George Street, Toronto, Ontario M5R 2P1.

May

Canadian Academy of Periodontology Annual Meeting, Chateau Champlain Hotel, Montreal, Que., May 16-19, 1980. Contact: Dr. J.P. Masson, Drummond Medical Building, 1414 rue Drummond, Suite 1110, Montreal, Que. H3G 1W1.

British Columbia College of Dental Surgeons 1980 Convention, Hyatt Regency Hotel, Vancouver, May 27-31, 1980. For further information, please contact: Venue West Ltd., 1704 — 1200 Alberni Street, Vancouver, B.C. V6E 1A6, phone: (604) 681-5226.

Les journées dentaires du Québec, Queen Elizabeth Hotel, Montreal, Quebec, May 25-29, 1980. Contact: Doctor Morton

July

Canadian Academy of Restorative Dentistry Annual Scientific Sessions, Chateau Halifax, Halifax, Nova Scotia, July 11-12, 1980. Contact: Dr. D.C.T. MacIntosh, Scientific Chairman, 200 Medical Arts Building, 5880 Spring Garden Rd., Halifax, N.S. B3H 1Y1.

Canadian Academy of Prosthodontics, Halifax, Nova Scotia, July 11-12, 1980. Contact: Dr. B.M. Jackson, secretary-treasurer, 22-22 Water St. South, Kitchener, Ont. N2G 4K4.

International

February

East Coast District Dental Society, Miami Winter Meeting, Fontainebleau Hilton, Miami Beach, Florida, February 1-3, 1980. Contact: Barbara Sims, Executive Director, East Coast District Dental Society, 420 South Dixie Highway, 2-E, Coral Gables, FL 33146, U.S.A.

American Academy of Dental Practice Administration, Chicago, IL, U.S.A., February 14-16, 1980. Contact: Mrs. Virginia M. Savage, 15609 Meadow Park Dr., Sun City, AZ 85351, U.S.A.

American Academy of Crown and Bridge Prosthodontics, Chicago, IL, U.S.A., February 16-17, 1980. Contact: Dr. John H. Emmert, 25801 Lakeshore Blvd., No. 113, Euclid, OH 44123, U.S.A.

American Academy of Restorative Dentistry, Chicago, IL, U.S.A., February 16-17, 1980. Contact: Dr. H. Ward Fountain, 435 Whitcomb St., Kalamazoo, MI 49001, U.S.A.

Europäischen Zahnärztlichen Fortbildungskongress with the Freien Verbandes Deutscher Zahnärzte, Davos, Switzerland, February 17-March 1, 1980. Contact: Freier Verband Deutscher Zahnärzte e.v., Service-Abteilung, Rheinallee 55, 5300 Bonn 2 (Bad Godesberg), Germany.

International College of Dentists Luncheon, Pick Congress Hotel, Chicago, IL, U.S.A., February 18, 1980. Contact: Dr. Richard A. Kozal, 7447 W. 63rd Street, Summit, IL 60501.

12th European Dentists Continuing

March

San Diego Dental Medical Symposium, Aspen, Colorado, U.S.A., March 1-8, 1980. Contact: Mr. Daman Nelson, 110 W "A" St., San Diego, CO 92101, U.S.A.

Health, New Orleans, Louisiana, U.S.A., March 6-9, 1980. Contact: Dr. Eugene W. Lewis, 4604 S. Harvard, Tulsa, OK 74135, U.S.A.

Third International Conference on Dental Electrosurgery, Miami, Florida, U.S.A., March 7-8, 1980. Contact: Dr. Jacob Kline, School of Engineering and Environment Design, University of Miami, P.O. Box 24894, Coral Gables, FL 33124, U.S.A.

Eighth Australian Orthodontic Congress, Perth, Australia. March 23-29, 1980. Contact: Hon. Secretary, Australian Society of Orthodontists, 179 St. George's Tce. Perth, W.A. 6000, Australia.

The Bermuda Dental Association Spring Meeting, Bermudian Hotel, Hamilton, Bermuda, March 24-25-26, 1980. Contact: The Secretary, The Bermuda Dental Association, P.O. Box 785, Hamilton 5, Bermuda. Phone: (809) 292-7676.

Tenth Asian Pacific Dental Conference, Singapore, March 26-31, 1980. Contact: Hon. Secretary, Singapore Dental Association, 4-A College Rd., Singapore 3, Republic of Singapore.

April

Latin American Confederation of Dental Prosthetics — 11th Congress, Barcelona, Spain, April, 1980. Contact: Julio Medrano Duaso, presidente, Asociacion de Protésicos Dentales de Catalunya, Avda. de Roma 2-4, Barcelona 15, Spain.

First World Biomaterials Congress, Baden, near Vienna, Austria, April 8-12, 1980. Contact: Mrs. E. Maurer, Medical Academy of Vienna, Alser Strasse 4, A-1090 Vienna, Austria.

International Congress of the Panamerican Association of Periodontology, San Juan, Puerto Rico, April 15-20, 1980. Contact: Benjamin Vargas, G.P.O. Box 70175, San Juan, Puerto Rico 00936.

Sixth Annual Meeting of the French Society of Periodontology, Monte Carlo, Monaco, April 29-May 1, 1980. Contact: Societe Francaise de Parodontologie, 57 Rue d'Amsterdam, 75008 Paris.

May

Schweizerische Zahnärzte-Gesellschaft (SSO), Interlaken, Switzerland, May, 1980. Contact: Franz Plattner, Chefredaktor des Bulletins, Ottoplatz 21, 7000 Chur, Switzerland.

American Academy of Oral Pathology, San Antonio, Texas, U.S.A., May 12-16, 1980. Contact: Dr. Arthur Miller, School of Dentistry, Temple University, 3223 N. Broad St., Philadelphia, PA 19140, U.S.A.

Academy of Denture Prosthetics, Daytona Beach, Florida, U.S.A., May 18-23, 1980. Contact: Dr. William R. Laney, Dept. of Dentistry, Mayo Clinic, Rochester, MN 55901, U.S.A.

Tenth International Meeting on Dental Implants and Transplants, Bologna, Italy, May 23-25, 1980. Contact: Professor G. Muratori, Gruppo Italiano Studi Implantari Sezione Congressi, Via S. Gervasio 1, I-40121, Bologna, Italy.

American Academy of Pedodontics, San Francisco, California, U.S.A., May 24-27, 1980. Contact: Miss Merle C. Hunter, 211 E. Chicago Ave., Chicago, IL 60611, U.S.A.

June

Eighth International Conference on Oral Biology, Tokyo, Japan, June 1-3, 1980. Its theme will be: Oral Disease Prevention — its implications and applications. An interesting study tour program in Japan, China and Thailand is being arranged in connection with the conference. Contact: Dr. George S. Beagrie, University of British Columbia, Faculty of Dentistry, 2075 Westbrook Place, Vancouver, B.C. V6T 1W5.

The 58th General Session of the International Association for Dental Research, Royal Hotel, Osaka, Japan, June 5-8, 1980. Contact: Yojiro Kawamura, chairman I.A.D.R. Organizing Committee, School of Dentistry, Osaka University, 4-3-48 Nakanoshima, Kita-ku, Osaka, Japan.

Symposium on the Prevention in Stomatology, Dolny Kubin, Czechoslovakia, June 5-7, 1980. Contact: Prim. MUDr. V. Ťazandlák, Dúnz — Dolny Kubin,

Nemocnična ul. 4, 026 14 Dolný Kubin, Czechoslovakia.

58th IADR Congress, Osaka, Japan, June 5-8, 1980. Contact: Dr. Yojiro Kawamura, Osaka University Dental School, 32 Joan-cho, Kitaku, Osaka, 530 Japan.

Seventh International Conference on Oral Surgery, Trinity College, Dublin, Ireland, June 23-26, 1980. Contact: Professor I.A. Findlay, Chairman, Organizing Committee, Seventh International Conference on Oral Surgery, 12 Pembroke Park, Dublin 4, Ireland.

86th Meeting of the American Dental Society of Europe, Stratford-upon-Avon Hilton, Stratford-upon-Avon, England, June 24-28, 1980. Contact: The Secretary, Dr. Brian J. Parkins, 57 Portland Place, London W1N 3AH, England.

Fifth International Congress of Dento-Maxillo-Facial Radiology, Portland, Oregon, U.S.A., June 28-July 2, 1980. Contact: Dr. Walter H. Fox, 1400 Mill Street, Eugene, OR 97401, U.S.A.

July

British Dental Association Centenary Meeting, London, England, July 10-11, 1980. Contact: R.B. Allen, secretary, British Dental Association, 64 Wimpole Street, London W1M 8A1, England.

Fourth International Symposium on the Prevention & Detection of Cancer, Wembley Conference Centre, London, England, July 26-31, 1980. Contact: Fourth International Symposium on Prevention & Detection of Cancer, Room 1909, 375 Park Avenue, New York, N.Y. 10022, U.S.A.

August

New Zealand Dental Association Jubilee Conference 1905-1980, Dunedin, New Zealand, August 25-29, 1980. Contact: The Conference Secretary, P.O. Box 647, Dunedin, New Zealand.

Future meetings of the ACFD/AFDC are scheduled to take place in Montreal (1980), McGill University; Vancouver (1981), University of British Columbia; Halifax (1982), Dalhousie; Edmonton (1983), University of Alberta; and Winnipeg (1984), University of Manitoba.

Fédération Dentaire Internationale, International Dental Show, Hamburg, Germany, August 25-September 7, 1980. Contact: M. Jean-Pierre Schweizer, sales manager, Conference Travel of Canada Ltd., 11 Adelaide Street West, Suite 309, Toronto, Ont., Can., M5H 1L9.

September

Fédération Dentaire Internationale, 68th Annual World Dental Congress, Hamburg, Germany, September 2-7, 1980. Contact: Dr. R. Braun, Bundesverband der Deutschen Zahnärzte, Universitätsstrasse 73, 5000 Köln 41, Germany.

Federation of Prosthodontic Organizations, Chicago, Illinois, U.S.A., September 15-16, 1980. Contact: Mr. Eric M. Bishop, Suite 1636, 211 East Chicago Ave., Chicago, IL 60611, U.S.A.

Genoa International Fair — 10th Exponential, Genoa, September 24-27, 1980. Contact: Fiera di Genova, P. le J.F. Kennedy, 16129 Genoa.

October

Third National Convention and III International Conference of Oral Health, Lima, Peru, October 1-4, 1980. Contact: Dr. Gilberto Dominguez, Av. Benavides 264-902, Lima 18, Peru, South America.

International College of Dentists Annual Session, New Orleans Hilton, October 8-13, 1980. The U.S.A. Section Convocation and Banquet, Saturday October 11, 1980. Reservations may be made by sending a cheque for \$25 per person to the International College of Dentists, 3138 Commodore Plaza, Miami, FL 33133, U.S.A.

1981

Fédération Dentaire Internationale, 69TH ANNUAL WORLD DENTAL CONGRESS, Rio de Janeiro, Brazil, September 5-9, 1981.

Fédération Dentaire Internationale, 70TH ANNUAL WORLD DENTAL CONGRESS, Vienna, Austria, October 11-16, 1982.

Fédération Dentaire Internationale, 71ST ANNUAL WORLD DENTAL CONGRESS, Tokyo, Japan, October 1983.

Marketplace

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BRITISH COLUMBIA — Chilliwack. Space available in modern professional health centre in beautiful Fraser Valley one hour east of Vancouver. Area offers skiing, hiking, boating, mild climate and good practice potential. Interested party can associate in conscientious, successful, preventive and restorative practice with view to setting up on his own. Contact: Mr. Art Daher, 39 Yale Road East, Chilliwack, B.C. V2P 6J1, or call collect: (604) 792-0077 (office) or 792-2940 (residence).

BRITISH COLUMBIA — Southern Interior. Large practice for sale with two associates (one full time, one part time), hygienist, etc. Grossing in area of \$450,000 per year. Only good management and financially minded dentists need apply. Present owner wishes to retire at age 40. Excellent terms to right party. Also, an excellent house to be considered. This is an opportunity of a lifetime. Are you wasting your time and energy trying to build a practice? Wasted time is costing you valuable income. Reply to CDA Box Number 1915.

BRITISH COLUMBIA — Vancouver. Excellent West Broadway practice for sale. Thorough recall system. Hygienist present for many years. Two operatories. Present owner specializing. Reply to CDA Box Number 1953.

BRITISH COLUMBIA — Vancouver Island. Family practice for sale. Bright, attractive, two operator office in modern building. Equipment nearly new. Area experiencing rapid economic and population growth. Pacific playground offers mild winters and great salt-chuck fishing. Reply to CDA Box Number 1954.

BRITISH COLUMBIA — Victoria. For sale or lease, well established, three operator practice in advantageously located medical-dental building. Gross \$200,000. Owner pursuing graduate studies. Please reply in writing to: Hugh K. Nash, 4549 Montford Crescent, Victoria, B.C. V8N 3W6.

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ALBERTA — Calgary. If you wish to live in Calgary, here is an opportunity to purchase a quality dental practice. There are three operatories, fully equipped with all the modern conveniences. Located in south Calgary in a large new shopping centre. There is room for further expansion when required. This office was designed for ease of patient and staff traffic flow. Some of the facilities include a panelipse, patient education room, staff room, large waiting room, hygiene room, and plush private office. Enquiries welcome. Please contact me by phone at: (403) 278-1402 or write to: #250-100, Anderson Road, S.E., Calgary, Alta. T2J 3V1.

ALBERTA — Central. Large preventive family practice for sale or lease. Well-established office with three operatories, central suction, nitrous oxide and air-conditioning. Present staff wishes to remain. Hospital privileges available. Excellent hunting and fishing nearby. Owner retiring because of ill health. Reply to CDA Box Number 1949.

ALBERTA — Edmonton. Dental practice for sale. Ultra-modern, new, spacious office in heart of downtown. Well-established, high-quality and highly preventative practice. Sharing space with two other dentists and three hygienists. Newly decorated. Ideal opportunity for new or recent graduate. Would consider graduate of 1980 dental class. Reply to CDA Box Number 1939.

ALBERTA — Medicine Hat. Practice for lease: established eight year old, high quality general practice with emphasis on Crown and Bridge, Perio and Endo. Excellent opportunity to enter a busy practice with no capital expense. Partner returning to graduate school. Apply to: Dr. D. Habijanac, 304, 578-3rd. Street, S.E., Medicine Hat, Alta. T1A 0H3. Phone: (403) 527-7833 or 526-2730 (home).

SASKATCHEWAN. For sale: Very busy group practice in a large city. Practice has five dentists and two hygienists. Owner is retiring but is willing to stay on as an associate if desired. For more information reply to CDA Box Number 1940.

SASKATCHEWAN — Kipling. Back to the country. Practice for sale or lease, in progressive town of 1,000 to 1,500, with all facilities. Building is 24' x 30'. Two operatories, can be enlarged. Have practiced for 30 years, but due to poor health must retire. Parkland area with nearest dentist 50 miles. Come and arrange your own terms. Income compatible with ability and desire. Contact: Dr. A.F. Cook, Box 147, Kipling, Sask. S0G 2S0.

ONTARIO — Exceptional opportunity to purchase a fine preventive family practice well-established with high earnings and excellent personnel. 45 minutes north of Toronto in farming community with drawing area of 10,000. Two modern equipped operatories with third partially set up. Reply to CDA Box Number 1925.

ONTARIO — Hawkesbury. Dental office available for rent, in new expansion to professional and commercial arcade, on main floor across hall from medical centre. Space for two operatories, private office, lab, business office and waiting room and wash closet, (625 sq. ft.). Four stores fronting the main street and in the arcade a mix of tenants including medical doctors, optometrist, dental therapist and dental technologist to come. Front and back entrance from parking lot for 160 cars. Apply to: Assaly Realities Ltd., 129 Main St. E., or phone: (613) 632-2719.

ONTARIO — London. For lease: 500 sq. ft. and 850 sq. ft., in modern medical-dental building. Excellent parking, medical laboratory, X-ray laboratory. Phone: (519) 432-8193.

ONTARIO — Stratford area. For sale: modern ten year old, two chair practice. Ground floor available in very prosperous resort area. Health reasons. Call collect: (519) 527-1530.

ONTARIO — Toronto (Bathurst-Eglinton). Private sale: Two-storey, air-conditioned, dental and medical suite. Luxurious apartment with en suite

laundry, all appliances, ample parking, double lot. \$259,900, excellent terms, possession arranged. Contact: Dr. Robert Brown, 1739 Bathurst St., Toronto, Ont. M5P 3K5.

QUEBEC — Montreal area. Long established very busy general practice for sale in central location near hospitals. In new office building, two fully equipped modern operatories, laboratory, dark room, sterilization/stockroom, reception and waiting area, private office (800 sq. ft.); interesting lease for four more years: owner wants to retire. Would consider staying on for two to three days per week in order to achieve a smooth transition. Reply to CDA Box Number 1955.

Associateship Available

ALBERTA — Pincher Creek. Associate To Join Practice (position available June 1, 1980). Associate needed to replace one dentist leaving three-man preventative practice in Pincher Creek, Alberta (30 miles north of Waterloo Park). Latest equipment, hygiene department, four-day work week. Country living with all big cities amenities. Suitable candidate eligible for partnership. Telephone: (403) 627-3290 collect or after 6:00 p.m. phone: (403) 627-4972.

ALBERTA — Southern. Associate wanted. Contact: Dr. Hank Griesbach, Box 1450, Fort MacLeod, Alta. T0L 0Z0. Phone: (403) 553-4455.

ONTARIO — Cambridge. Modern practice requires full-time associate. Large established patient load requires conscientious operator exper-

ienced in all phases of dentistry. The office has four operatories and Pan-elipse. Reply to CDA Box Number 1947.

ONTARIO — Toronto. Oral surgeon with adequate training in out-patient general anaesthesia, wanted as an associate for group practice. Objective — eventual full partnership. Must have NDEB or Ontario Licence. Apply: Secretary, Oral Surgery, 168 Eglinton Avenue West, Toronto, Ont. M4R 1A7. Phone: (416) 487-5264.

ONTARIO — Toronto. Associate required for busy practice. Well equipped and good working environment. Great potential for industrious, patient oriented applicant. Reply to CDA Box Number 1945.

QUÉBEC — Anjou. Dentiste associé demandé, pratique générale dans un centre dentaire. Correspondre avec Madame J. Gingras, Centre Dentaire Anjou, suite 225, 8001 boul. Les Galeries D'Anjou, Anjou, Qué. H1M 1W9. Tél: (514) 353-6220.

Opportunities Available

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BRITISH COLUMBIA — Fraser Valley. Excellent opportunity for orthodontist in growing community, 40 miles from greater Vancouver. Reply to CDA Box Number 1946.

BRITISH COLUMBIA — Revelstoke. Lucrative, preventive family practice for sale/lease; nestled in the scenic Columbia River Valley of eastern British Columbia. Modern efficient Cox floor plan suitable for one or two dentists with room for expansion. Excellent financial opportunity in thriving environment with unlimited recreation. Phone collect: (604) 837-5149.

ALBERTA — Dentist wanted for modern dental office in a two year old medical-dental building located in a progressive small town in East Central Alberta. Practice area serves 14,000 persons. For further details contact: Dr. Donald, Phone (403) 854-3351.

ALBERTA — Peace River. Excellent opportunity for enthusiastic persons seeking a large patient load, higher than average income, in a progressive young town. Modern large office, nine operatories. Partnership available after one year. Contact: Drs. Bob Sanderuck and Stu Root, 10026-102 Street, Peace River, Alta. T0H 2X0, or phone: (403) 624-1646 or 624-2238.

ALBERTA — Rockies. Expanding tourist town requires dentist for new medical-dental clinic. Superb recreation in National Park. Reply to CDA Box Number 1941.

ALBERTA — Southern. Hygienist wanted. Contact: Dr. Hank Griesbach, Box 1450, Fort MacLeod, Alta. T0L 0Z0. Phone: (403) 533-4455.

ONTARIO — Dryden. Dental hygienist required for busy family practice. Modern fully-equipped dental office. Fishing, hunting, boating, skiing and other recreational facilities. One hour daily flight from Winnipeg and Thunder Bay. Reply in writing to: Box 419, Dryden, Ont. P8N 2Z1.

ONTARIO — Toronto. Periodontist to join busy group practice, within 50 miles west of Toronto, full or part-time. New professional building, fully equipped, etc. Area currently underserved by specialist. Reply in confidence to CDA Box Number 1905.

ONTARIO — Toronto. Paedodontist required for busy Paedodontic practice in north Metropolitan Toronto. Opportunities available for partnership. Position available immediately. Applicant must be certified to practise in Ontario. Reply in strict confidence to CDA Box Number 1912.

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Faculty of Dentistry
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THE UNIVERSITY OF BRITISH COLUMBIA. Faculty of Dentistry. The University of British Columbia is seeking a Head for its Department of Orthodontics which has academic responsibility for teaching both dental and dental hygiene students. It is expected that programmes at the graduate and postgraduate levels will be developed. The prospective candidate should have a registerable specialist qualification in Orthodontics, and extensive clinical, teaching and research experience. A demonstrated ability in administration would be a desirable asset. The successful candidate will receive an academic rank appropriate to his or her scholastic accomplishments. Salary is negotiable. The effective date of the appointment will be arranged but will not be later than July 1, 1980. Applications, nominations or inquiries should be sent to: The Chairman, President's Selection Committee, The University of British Columbia, Faculty of Dentistry, Office of the Dean, 2194 Health Sciences Mall, University Campus, Vancouver, B.C., Canada V6T 1W5.

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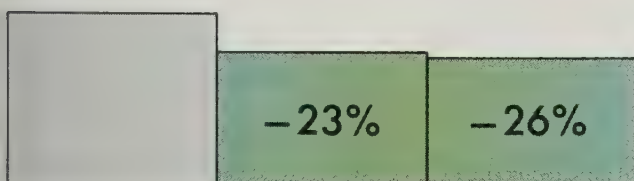


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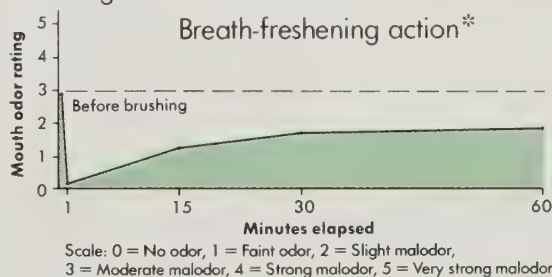


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Vol.48 No.2

Canadian
Dental Association

February
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Journal

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Février
1980

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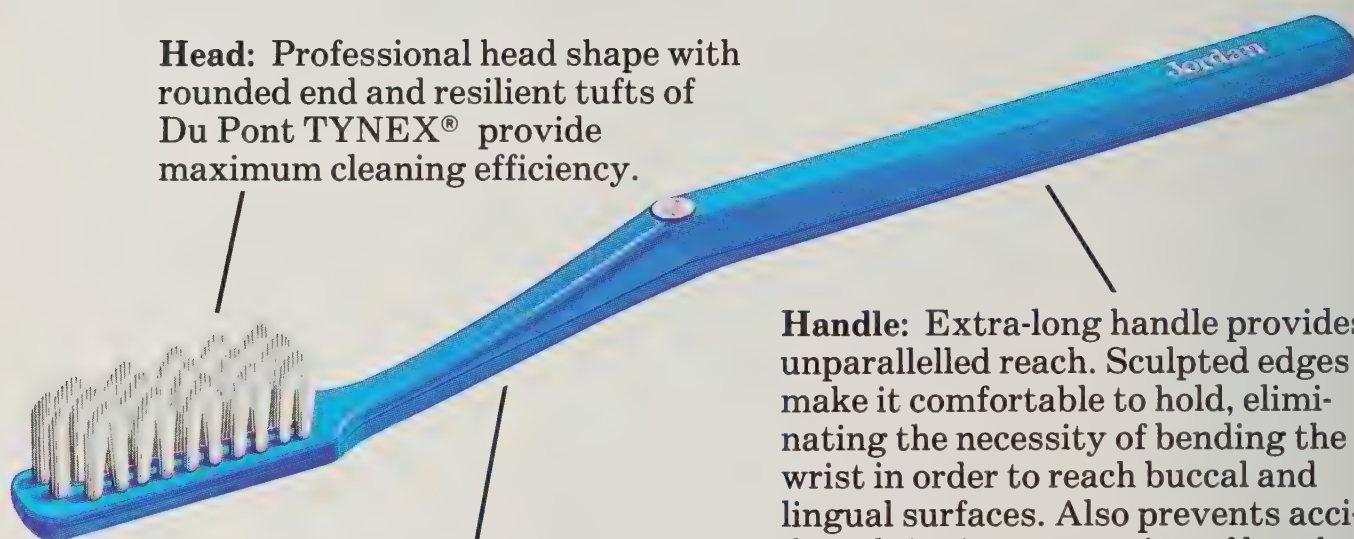
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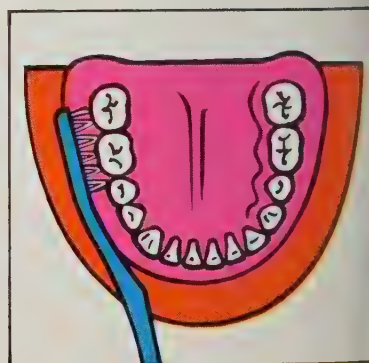
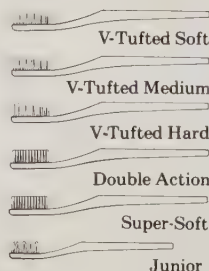
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Choice of design.



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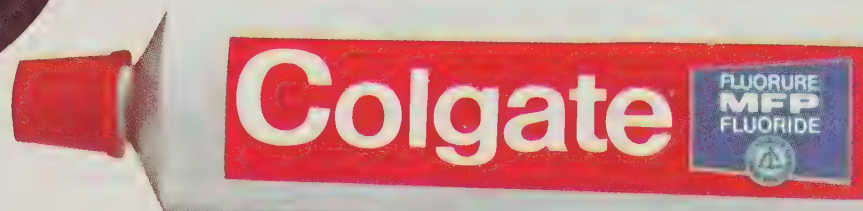
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*Ericsson, Y., The mechanism of the monofluorophosphate action on hydroxyapatite and dental enamel, Acta Odont. Scand., 21, 341-358 (1963).

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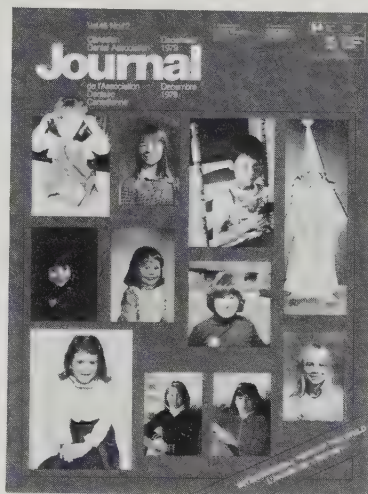
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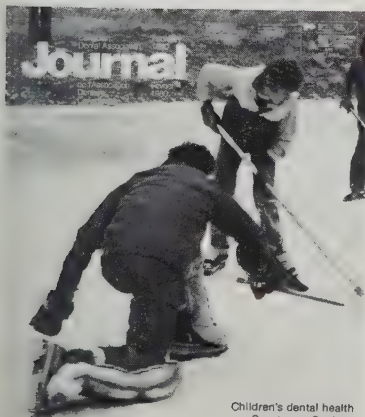
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Children's dental health Surveys in Quebec, Ontario, Manitoba, Alberta

Children's dental health Surveys — Quebec, Ontario, Manitoba, Alberta
Les enquêtes dentaires — Québec, Ontario, Manitoba, Alberta

Journal

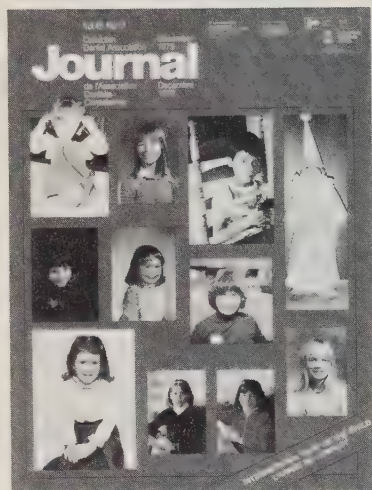
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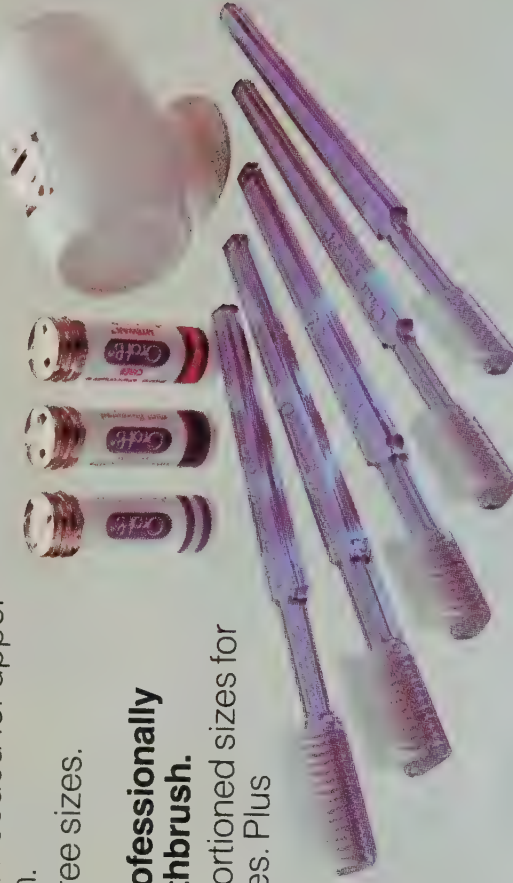
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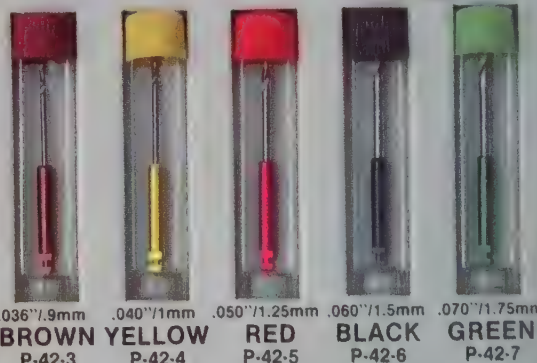
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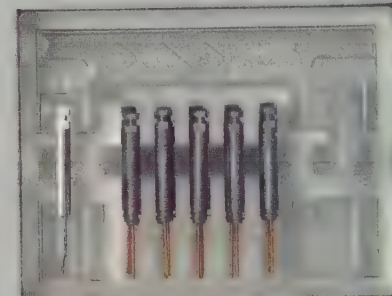


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DENTAL SURVEYS

Two decades ago, Canada was in the forefront of the development of dental surveys thanks largely to the pioneering efforts by Dr. R. Grainger, then professor of Epidemiology and Statistics at the Faculty of Dentistry, University of Toronto. But we failed to follow through on these initiatives and by the early 1970's Canada had fallen seriously behind the world's developed countries in documenting the dental health of its population. Furthermore, the two national dental survey efforts that were undertaken, "The Dental Health Survey of Canadian Provinces 1968-70" and "The Nutrition Canada Dental Survey 1970-72," were seriously compromised in implementation and/or analysis and gave either incomplete or suspect estimates of the dental health status of Canadians. Two good opportunities to fill the dental information void were squandered.

While the dental survey fell into a general eclipse in Canada, Dr. D.W. Lewis and Dr. A.M. Hunt of the University of Toronto maintained an interest in dental epidemiology and kept alive a scientific capability that was highly specialized and scarce. In this context Dr. Hunt spent part of a 1973-74 sabbatical leave at the World Health Organization in Geneva to study the operation of the WHO-sponsored and United States Public Health Service-funded "International Collaborative Study of Dental Manpower Systems in Relation to Oral Health Status." An ambitious undertaking of large-scale, carefully designed and standardized dental surveys of eight to nine, 13 to 14, 25 to 34 and 35 to 44 year old subjects, the project initially involved five sites: Brisbane, Australia; Canterbury, New Zealand; Yamaguchi, Japan; Trondheim, Norway; and Hanover, West Germany. Dr. Hunt was then able to stimulate interest in certain parts of Canada for launching 'WHO inspired' surveys.

As a result, since 1976, four provincial dental surveys (three involving 2,000 or more subjects) have been undertaken in Manitoba, Ontario, Quebec and Alberta. Of the four, the Ontario project most closely resembles the design of the original WHO studies while the other three

surveys departed from the WHO protocol, primarily with regard to obtaining representative province-wide samples. Only the Ontario study included an adult component in its survey. It was particularly fortunate that Dr. D. Barmes, chief, Oral Health Unit, World Health Organization, was able to be in Canada for a two-week period in early 1977 to calibrate examination criteria and standards for both the Ontario and Quebec dental examining teams. At a later date, the Alberta examining team was calibrated by one of the Canadian epidemiologists who took part in the original sessions.

It is hoped that the publication in the *Journal* of the necessarily partial results from these four major studies will give all dentists and students of the Canadian dental system a more detailed knowledge of the dental health status of a significant proportion of Canadian children. (The four provinces in question represent 75.5 per cent of the Canadian population.)

The results have a further practical use in that they give rise to a number of policy considerations. The studies show dental health among schoolchildren is far from homogeneous across the country. For example, among the four provinces studied, the mean children's dental caries rates varied by a factor of two and permanent tooth loss by a factor of eight. In some provinces the difference in dental health status between urban and rural children is great whereas elsewhere it seems minimal. The average provincial caries treatment ratios (F/DMFT) ranged from a high of 68.5 per cent to a low of 30.5 per cent. The rate of orthodontic treatment varied among provinces by a factor of three.

Clearly, dental program needs require different emphasis in different parts of the country. The studies highlight the need for a cautious interpretation of national dental health estimates. Indeed, we should be equally as alert to the composition of provincial figures. Averages hide a great deal!

Dr. John W. Stamm,
McGill University,
Faculty of Dentistry.

ENQUÊTES DENTAIRES

Vingt ans passés, le Canada était à l'avant-garde dans le développement des enquêtes dentaires, grâce en grande partie aux efforts entreprenants du Dr R. Grainger, alors professeur d'épidémiologie et de statistiques à la Faculté de dentisterie, à l'Université de Toronto. Toutefois, nous n'avons pas donné suite à ces initiatives et, au début des années 1970, le Canada se classait parmi les derniers des pays développés quant à l'étude de la santé dentaire de sa population. En outre, les deux enquêtes dentaires qui furent entreprises sur le plan national, soit "l'Enquête sur la santé dentaire des provinces canadiennes, 1968-70," et "l'Enquête dentaire et l'alimentation au Canada, 1970-72," furent sérieusement compromises par la façon dont elles furent menées et/ou par la façon dont on en a interprété les données: les jugements portés sur l'état de santé dentaire des Canadiens en furent ou incomplets ou suspects. Ainsi furent gaspillées deux bonnes chances de combler la lacune dans ce domaine.

Pendant que le Canada négligeait de poursuivre des enquêtes dentaires, les Drs D.W. Lewis et A.M. Hunt, de l'Université de Toronto, continuèrent de s'intéresser à l'épidémiologie dentaire et à maintenir une discipline scientifique qui était hautement spécialisée et rare. Dans ce but, le Dr Hunt a passé, en 1973-74, une partie d'un congé sabbatique à l'Organisation mondiale de la Santé, à Genève, afin de se renseigner sur la manière dont était faite "l'Etude collective et internationale des effectifs dentaires en rapport avec l'état de santé dentaire." Cette étude était faite sous l'égide de l'OMS et subventionnée par le Service de Santé publique des Etats-Unis. Cet ambitieux projet d'enquêtes dentaires menées sur une grande échelle, soigneusement préparées et conduites selon des normes établies, impliquait des sujets de huit à neuf ans, de 13 à 14 ans, de 25 à 34 ans et de 35 à 44 ans. Au début, on avait choisi cinq sites: Brisbane en Australie, Canterbury en Nouvelle-Zélande, Yamanashi au Japon, Trondelag en Norvège et Hanovre en Allemagne de l'Ouest. Le Dr Hunt a pu alors éveiller l'intérêt de certaines régions du Canada et les inciter à lancer des enquêtes semblables à celles de l'OMS.

Il en est résulté, depuis 1976, quatre enquêtes dentaires (dont trois impliquent 2,000 sujets ou plus) qui ont été entreprises au Manitoba, en Ontario, au Québec et en Alberta. Des quatres, c'est celle de l'Ontario qui

se rapproche le plus des objectifs que l'OMS s'était fixés lors de ses premières études. Les enquêtes des trois autres provinces s'en éloignent, surtout en ce qui a trait aux échantillonnages faits à travers la province. Seule, l'Ontario a inclus un groupe d'adultes dans son étude. Circonstance particulièrement heureuse, le Dr D. Barmes, chef de la division d'hygiène buccale à l'OMS, a pu venir au Canada pour deux semaines, au début de l'année 1977, afin d'établir les critères et les normes d'examen pour les équipes de dentistes chargées d'enquêter en Ontario et au Québec. Plus tard, un des épidémiologistes qui avaient fait partie de ces premières équipes a pu former celle de l'Alberta.

Le Journal publie les résultats, nécessairement partiels, de ces quatre enquêtes importantes. Il est à espérer que dentistes et étudiants du corps dentaire canadien en tireront des connaissances plus détaillées sur l'état de santé dentaire d'une importante partie des enfants canadiens. (Les quatre provinces en question représentent 75.5 pour cent de la population du Canada.)

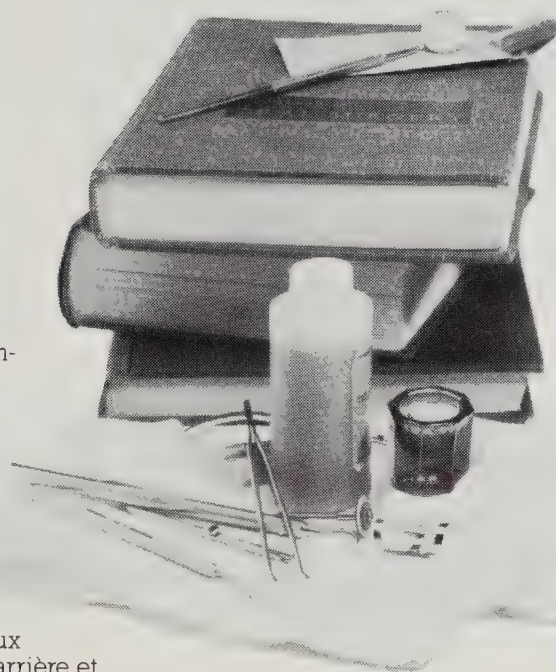
Autre portée pratique des résultats, ils incitent à faire plusieurs considérations sur la ligne de conduite à suivre. Les études démontrent que la santé dentaire parmi les écoliers est loin d'être homogène à travers le pays. Ainsi, dans les provinces impliquées, les taux moyens de caries dentaires chez les enfants varient par un facteur de deux et la perte des dents permanentes, par un facteur de huit. Dans certaines provinces, la différence dans l'état de santé dentaire entre enfants de la ville et enfants de la campagne est grande alors qu'elle paraît minime ailleurs. Les moyennes provinciales pour le traitement des caries varient, selon l'indice O/CAO(D), d'un maximum de 68.5 pour cent à un minimum de 30.5 pour cent. Le taux des traitements orthodontiques varie par un facteur de trois.

Il est évident que les programmes dentaires doivent mettre l'emphasis sur différents soins dans les différentes régions du pays. Les études font ressortir la nécessité de se montrer prudent quand il s'agit d'interpréter les données nationales sur la santé dentaire. De même convient-il d'être tout aussi attentif devant la présentation des données provinciales. Les moyennes cachent beaucoup de choses!

Dr John W. Stamm,
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Letters



White...

The irony is overwhelming. It was indeed the International Year of the Child but your cover (December, 1979) would have us believe the international child is a lovely, smiling, happy female Caucasian. Surely it is not necessary to point out that the world's and yes, Canada's children are Oriental, Black, Asian and Native as well as white.

In addition, are you aware that approximately one half of the world's population is male? With this in mind, how do you account for the fact that of 11 photographs one is assuredly a boy, two are equivocal and eight are girls? The woman's movement has come a long way but eight to one with two pending? Hardly "rep by pop." The cover fails to do justice to the contents.

Happy New Year.

William C. Hadaway, D.D.S.,
Vancouver, British Columbia.

The Journal of the Canadian Dental Association is pleased to make this space available for "Letters to the Editor". All letters must be signed and the editor reserves the right to edit communications according to space requirements.

Indian...

The editor of the Journal of the Canadian Dental Association may be commended for dedicating the cover of the December issue of the Journal to the "International Year of the Child". They are certainly nice children but they hardly represent a cross section of the child population of Canada. Children in this country represent people from the near and far East, from the Caribbean, from Africa, from South America, and last but by no means least, our Indian children who most certainly deserve to be pictorially represented in any Canadian dedication to the International Year of the Child.

I.F. Goodin, D.D.S.
Ottawa, Ontario

black/ brown too

Canada, as you know, is made up of a variety of races — Blacks, Browns, "Reds", Whites, Yellows.

It is unfortunate, that this fact was overlooked in the layout of the front cover of the December issue, commemorating a grand finale for 1979 International Year of the Child.

Carl L. Anthony, D.D.S.
Ottawa, Ontario.

Editor's note: Interestingly enough, the children on the cover of the December, 1979 Journal were not chosen because of their color. Nor were other children *not* photographed because of their color.

The children appear regardless of race, color or creed. They represent no one but themselves. If, however, background is important, please note one is Chinese, one is Irish and two are of Norwegian and Canadian Indian heritage. Another is of German descent and another is of South African parentage.

International Year of the Child is indeed International.

FLUORINSE*

Sodium fluoride rinse

Composition: Contains sodium fluoride in a pleasantly flavoured neutral pH liquid. Contains alcohol (3% by volume).

Indications: Dental caries prophylactic.

Precautions: Limited to topical use in the mouth only. DO NOT SWALLOW. Excessive ingestion may cause nausea and excessive use may cause dental fluorosis.

Contraindications: Sodium-free diets.

Dosage and Administration: 1 to 2 teaspoons (5 to 10 ml) of Fluorinse is swished around vigorously in the mouth for approximately 1 minute and then expectorated. Recommended at bedtime, after brushing and flossing teeth thoroughly. For maximum benefit, patient should not eat or drink for a period of 30 minutes after rinsing.

How supplied: Fluorinse is available in 455 ml plastic bottles with child-resistant caps.

Weekly Rinse	Daily Rinse	Weekly Rinse
Cinnamon (red) 0.2% sodium fluoride	Ice Mint (blue) 0.05% sodium fluoride	Mint (green) 0.2% sodium fluoride

Caution: Keep out of reach of children.

FLOZENGES*

Sodium fluoride lozenges

Composition: Contains sodium fluoride in lozenge form. Contains no sugar, saccharin or cyclamate.

Indications: To help protect against dental caries, particularly for children through age 14.

Precautions: If this product is used in an area where the drinking water has a natural fluoride content in excess of 0.7 parts of fluoride ion per million parts of water, or is artificially fluoridated, fluorosis of the tooth enamel may result.

Contraindications: Sodium-free diets.

Dosage and Administration: FOR CHILDREN OVER 3 YEARS OF AGE: 1 lozenge daily, preferably at bedtime after brushing and flossing teeth thoroughly. Flozenge is slowly sucked and dissolved in the mouth. FOR CHILDREN 2 TO 3 YEARS OF AGE: 1 lozenge every other day, as above.

Fluoride in drinking water	Recommended supplement	
	Children 2-3	Children 3 & over
0-0.3 ppm	0.5 mg	1.0 mg
0.3-0.7 ppm	0.25 mg	0.5 mg

How supplied: Flozenges are available in plastic, child-resistant containers of 120 lozenges.

Two flavours:	Orange	Strawberry
	0.5 mg of fluoride ion	1.0 mg. of fluoride ion

Caution: Keep out of reach of children. Exceeding recommended dosage over a prolonged period of time may be harmful.

References

- † According to the International Workshop on Fluorides and Dental Caries Reductions, School of Dentistry, University of Maryland, 1974: "...concentration of recommendable rinsing solutions ranges from 0.025% to 0.2%." (Page 140). Many available rinses do not meet this standard.
1. Confirmed by world-wide dental authorities (International Workshop, Maryland, 1974).
2. Stephen KW. Campbell D: Caries reduction and cost benefit after 3 years of sucking fluoride tablets daily at school. *Brit. dent. J.* April 1978, 144-202.

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- Caries rampant adults.
- Adults or children with poor dental hygiene habits or without access to regular dental care.
- Orthodontic and periodontic patients.

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Indiens...

Le rédacteur en chef du Journal de l'Association dentaire canadienne mérite sans doute des éloges pour avoir consacré la page couverture du numéro de décembre à l'Année internationale de l'enfant. Certes, ce sont là des enfants charmants, mais ils ne représentent guère la population enfantine à travers le Canada. Les enfants de ce pays représentent des gens du Proche et de l'Extrême-Orient, des Caraïbes, de l'Afrique et de l'Amérique du Sud. Enfin, les derniers mais en aucune façon les moindres, nos enfants indiens méritent très certainement de voir leurs portraits figurer dans toute revue dédiée à l'Année internationale de l'enfant.

I.F. Goodin, D.D.S.
Ottawa, Ontario.

Caucasiennes...

L'ironie est déconcertante. C'était en effet l'Année internationale de l'enfant, mais votre couverture (décembre 1979) nous inciterait à croire que l'enfant international est une charmante Caucasienne souriante et heureuse. Sans doute n'est-il pas nécessaire de souligner que les enfants du monde et, oui, ceux du Canada sont des Orientaux, des Noirs, des Asiatiques et des indigènes aussi bien que des Blancs.

En outre, savez-vous qu'environ la moitié de la population mondiale est mâle? Ce fait présent à l'esprit, comment expliquez-vous que, des onze photographies, une soit celle d'un garçon, deux portent à équivoque et huit soient celles de filles? Le mouvement de la femme a fait des progrès, mais huit contre un avec deux qui laissent indécis? Ce n'est guère représentatif de la population. La couverture du journal ne correspond pas à son contenu.

Heureuse Année,
William C. Hadaway, D.D.S.
Vancouver, Colombie Britannique.

Noirs et bruns

Le Canada, comme vous le savez, se compose de races variées, — de Noirs, de Bruns, de "Rouges", de Blancs, de Jaunes.

Il est malheureux que ce fait vous ait échappé dans le montage du numéro de décembre qui soulignait

Le Journal de l'Association Dentaire Canadienne est heureux d'offrir cet espace aux lecteurs désireux d'envoyer des "Lettres à la rédaction". Toutes les lettres doivent être signées et la rédactrice en chef se réserve le droit de les raccourcir si le manque d'espace l'impose.

d'une façon mémorable et grandiose la fin de l'Année internationale de l'enfant.

Carl L. Anthony, D.D.S.
Ottawa, Ontario.

Note de la rédaction: Il est assez intéressant de faire observer que les enfants apparaissant sur la page couverture du numéro de décembre 1979 n'ont pas été choisis à cause de leur couleur. De même, ce n'est pas à cause de leurs couleurs que d'autres enfants n'ont pas été photographiés.

Les enfants de la couverture ont été choisis indépendamment de leur couleur, de leur race ou de leur croyance. Ils ne représentent personne qu'eux-mêmes. Si, toutefois, les antécédents sont importants, on notera avec bonté que l'un des enfants est chinois, qu'un autre est irlandais et que deux sont de descendance indo-canadienne et norvégienne. Un autre est d'origine germanique et un autre encore provient d'une famille sud-africaine.

Il ne faut pas en douter, l'Année internationale de l'enfant est internationale.

Erratum

Nous prions le Dr Covit de bien vouloir nous excuser pour l'erreur qui s'est glissée dans la version française de son éditorial (numéro de janvier 1980). Au lieu de la phrase incomplète qui constitue l'avant-dernier paragraphe, le lecteur aurait dû lire:

A titre de président de votre association nationale, je m'adresse à vous, mes confrères, individuellement et collectivement, afin d'obtenir votre aide et votre appui, votre collaboration et votre confiance.

La rédaction

Lt. Col. H.S. Wood new director

Lieutenant Colonel H.S. Wood was recently appointed director, Dental Plans and Requirements, National Defence Headquarters in the first of a series of changes in the Canadian Forces Dental Services. LCol Wood has taken over from Colonel A.G. Taylor who has moved to Trenton as commanding officer of 13 Dental Unit Ontario Region.

Lieutenant Colonel P.R. McQueen has assumed the duties of commanding officer of 35 Field Dental Unit, Lahr, Germany replacing Lieutenant Colonel H. Brogan who has been transferred to Halifax, Nova Scotia.



Col. L.R. Pierce

Recent retirements in the Canadian Forces Dental Services include

Colonel L.R. Pierce who first enlisted in the Canadian Army (Active) in April of 1942. Colonel Pierce served in eastern Canada as a Dental Laboratory Technician and was released in October 1945 as a Sergeant.

He re-enrolled as a Second Lieutenant in September, 1948 during his final year of dentistry at the University of Toronto. During his career he held numerous appointments including commanding officer of dental units in Winnipeg and Trenton.

In 1974, Colonel Pierce was named Queens Honorary Dental Surgeon. He and his wife Terry now live in Aylmer, Ontario.

Colonel G. MacDougall has also retired from the Services. He is the only dental officer who served as a dentist in World War II, and continuously since, in the Canadian Forces. He enrolled in 1940 and, upon completion of his University training at McGill in 1944, he entered active service.

His career includes service in Germany, the Middle East and at the Canadian Forces Dental Services School at Base Borden. He was commanding officer of 15 Dental Unit in Quebec at the time of his retirement.

He was appointed a Queens Honorary Dental Surgeon in 1974 and will retire in the Lennoxville area of Quebec.

Western dentists receive grants

A recent report out of Saskatchewan says grant programs in that province are encouraging dentists to set up practices in small urban centres and rural areas. To date, 28 areas have benefited from the programs, first established in 1976 by the provincial department of health. Since that time, grants totalling \$350,000 have been paid.

All dentists eligible for licensing in Saskatchewan may apply for either the \$10,000 or \$20,000 grants which are determined by the dentist-population ratio in the area.

Grants of \$10,000 are provided to assist dentists setting up in areas where the ratio is one dentist for every 3,500 to 6,500 residents. Dentists agree to remain in that location for at least two and a half years.

The \$20,000 grants are provided in areas where the dentist-population ratio is one to 6,500 or more. The dentist agrees to stay in practice for at least five years.

Grants are paid in installments of \$1,000, four times a year and are cut off if a dentist leaves an area before the agreed upon length of tenure is reached.

Quebec Board appoints Chicoine

Dr. Claude Chicoine, president of the Quebec Dental Surgeons' Association was recently appointed to the Board of Directors of the Quebec Health Insurance Board.

Dr. Chicoine graduated from the University of Montreal Faculty of Dentistry in 1969. He has been president of the QDSA since 1975. Dr. Chicoine has participated in the organization committees of two Canadian Dental Association Conventions (1972 and 1973) and was a governor of the Order of Dentists of Quebec in 1972.

CDA Retirement Savings Plan

Unit values of the Canadian Dental Association's Retirement Savings Plan stood as follows on December 31, 1979.

<i>Common Stock Fund</i>	\$44.894
<i>Fixed Income Fund</i>	\$22.275
<i>Guaranteed Fund</i>	\$16.813
<i>Balanced Fund</i>	\$11.639

Total assets (market value) of the plan were \$33,063,651.

The previous month's figures, as

of November 30, 1979, stood as follows:

<i>Common Stock Fund</i>	\$42.609
<i>Fixed Income Fund</i>	\$22.088
<i>Guaranteed Fund</i>	\$16.643
<i>Balanced Fund</i>	\$11.263

Total assets (market value) of the plan were \$33,090,154.

For further information write to: Canadian Dental Service Plans Inc., P.O. Box 7500, Station A, Toronto, Ontario M5K 1A0.



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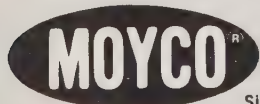
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Brock Sharpe- CDA director

Hubert Drouin, executive director of the Canadian Dental Association is pleased to announce the appointment of Brock Sharpe as director of administration. Mr. Sharpe began working at CDA in December last year.

He studied Business Administration at Carleton University and Algonquin College in Ottawa. Mr. Sharpe is responsible for the on-going administrative functions at the Association's national headquarters. He also co-ordinates and supervises operations in accounting, finance, personnel and oversees the property management of CDA's head office.

Prior to joining the Canadian Dental Association, Mr. Sharpe was director of Administration and Personnel with a major real estate development corporation. He has also been employed as a manager with a national sports governing body.

A "retired" athlete, Mr. Sharpe remains a sports fan. He enjoys playing the piano and is a member of the Barbershop Harmony Singing Society. Bilingual, Mr. Sharpe has lived and travelled in Europe.

He and his wife Gail have two daughters, Alison and Meredith.

XI Biennial Conference on Canadian Dental Research and Education will be held in conjunction with the Annual ACFD/AFDC Meetings in Montreal at McGill University, June 15 to 20 this year. Plans for the program include two half day sessions on "The Application of computers in dental schools" (instruction, evaluation, clinical and administrative use) with Dr. Richard Mackenzie of the University of Florida; and a half day program "The Grant Connection," with Dr. W.O. Spitzer, director, W.K. Kellogg Centre for Advanced Studies in Primary Care, McGill University.

Societies/ Sociétés

Sault Ste. Marie and District Dental Society . . . announces its slate of officers for 1980. President, Dr. Simins Payendah; vice president, Dr. George Shunock; secretary, Dr. Alexander Moss; treasurer, Dr. Bruce Lattimer.

L'Association des Périodontistes du Québec . . . le nouveau conseil exécutif se compose du Dr M. Stutman, président, du Dr S. Galperin, vice-président, du Dr J.P. Masson, secrétaire, et du Dr E. Shore, trésorier; le président sortant est le Dr J. Turgeon.

Association of Periodontists of Quebec . . . new executive includes: president, Dr. M. Stutman; vice president, Dr. S. Galperin; secretary, Dr. J.P. Masson; treasurer, Dr. E. Shore; past president, Dr. J. Turgeon. **L'Association des Périodontistes du Québec** . . . nouveaux membres de l'exécutif: président, Dr M. Stutman; vice président, Dr S. Galperin; secrétaire, Dr J.P. Masson; trésorier, Dr E. Shore; ancien président, Dr J. Turgeon.

College of Dental Surgeons of Saskatchewan . . . president for the coming year is Dr. F.M. Bourassa of Regina. A native of Lafleche, Saskatchewan, Dr. Bourassa is a 1962 graduate of the Faculty of Dentistry at the University of Montreal. Prior to locating in Regina, he practised in Assiniboia, Saskatchewan. He has served in all executive positions of the Regina Dental Society. College vice president for 1980 is Dr. E.W. Zak of Saskatoon.



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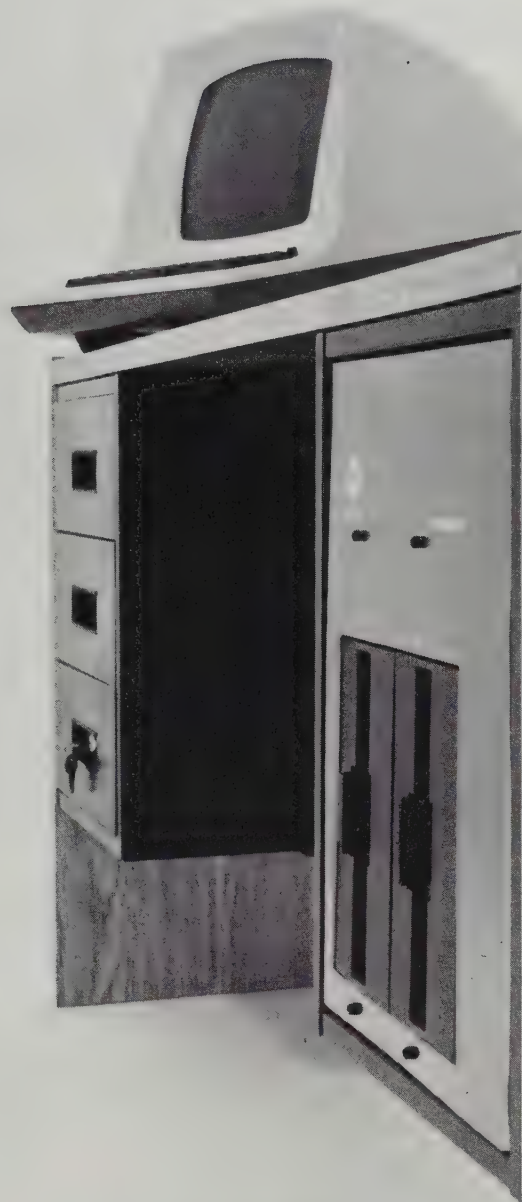
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Faculties/ Facultés

University of Saskatchewan . . . College of Dentistry is responsible for a weekly newspaper column "Your Health" in the Saskatoon Star Phoenix and other newspapers in Saskatchewan.

Dean Ernest Ambrose was recently appointed chairman of the Committee of Council of the College of Dental Surgeons of Saskatchewan to study the feasibility of an Adolescent Dental Care Program incorporating the private sector in the delivery system. This would be an extension of the existing Children's Dental Care Program.

The regulations of the College of Dental Surgeons of Saskatchewan have been amended to allow the dean of the College of Dentistry to become a voting member of Council.

Dr. M.N. Halhoul, Restorative and Prosthetic Dentistry, recently spent three months as a visiting lecturer at the University of Alexandria, Egypt.

University of Toronto . . . Dr. J. Anderson is assistant director, Clinics; Dr. N. Levine is assistant dean (Academic); and Dr. B. McAdam is acting chairman, Restorative Dentistry with appointments effective until June 30 this year.

University of Western Ontario . . . Dr. B.A. Wright has joined the Division of Oral Pathology; Dr. M.D. Silver is chairman, Department of Pathology; and Dr. M. Suzuki has been granted Fellowship in the International College of Dentists.

University of British Columbia . . . Dr. C.S. Lear has resigned as head, Department of Orthodontics, but will continue as a full-time faculty member. Dr. Lear will focus on research work and the preparation of a text book manuscript.

Rosemary Parsons has been appointed dental assistant in the Department of Restorative Dentistry.

Marlane Paquin was elected president of the Canadian Dental Nurses and Assistants Association and has been

appointed representative to the Canadian Dental Association Council on Education. She has also been elected vice president of the British Columbia Dental Nurses and Assistants Association and will represent that organization with the B.C. College of Dental Surgeons.

Dalhousie University . . . Dr. Bernard Lilienthal, director of Research, Faculty of Dentistry, has been conducting a project, "Antibacterial agents on the bacterial population in the gingival sulcus," with a grant of just over \$21,000 from the Wm. S. Merrell Company, Ontario.

Université Laval . . . Le Dr Ralph Barolet vient d'être élu trésorier de la Société dentaire de Québec.

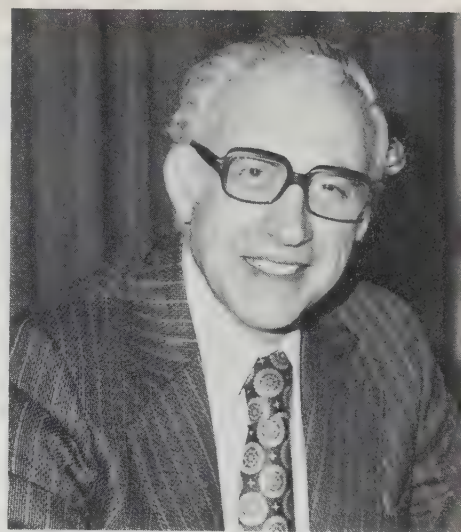
Le Dr Denis Robert est en congé d'études à l'Université de Boston. Il poursuit ses études supérieures en biologie buccale et en dentisterie opératoire.

Université Laval . . . Dr. Ralph Barolet was recently elected treasurer of the Quebec Dental Society.

Dr. Denis Robert is on study leave at Boston University doing graduate work in Oral Biology and Operative Dentistry.

University of Manitoba . . . Dr. Dale Gelskey was recently appointed lecturer in the Department of Stomatology. A radiological health specialist, Dr. Gelskey is involved in service, research, teaching and consulting with the dental and medical faculties and with the Manitoba Cancer Treatment and Research Foundation. Late last year the University finalized a 'twinning' agreement with the University of Ghent, Belgium and its recently established dental faculty. Areas of common interest in medicine and dentistry include toxicology, forensic medicine, accident research and nuclear medicine.

McGill University . . . Marietta Alibranti has continued her work as guest lecturer for the John Abbott College Dental Hygienists conducting a course in radiation protection and radiographic technique in the dental environment. She has also presented a



Dr. Ernest Ambrose

table clinic for "les Journées Dentaires." Last September Mrs. Alibranti addressed the Federation of Dental Societies of Greater Montreal on radiation protection in the dental environment.

University of Alberta . . . has two important projects underway. One is an examination of the academic structure and the other is a study of the mechanisms for the evaluation of teaching at the faculty.

Obituaries/ Nécrologies

SAINDON, Jean B., décédé août, 1979 à Drummondville, Québec.

HILLIS, Roland Richardson, died June 19, 1979 in Guelph, Ontario. Graduated University of Toronto, 1920.

SIMON, M.L. of Toronto, Ontario. Died October, 1979.

HUDGINS, Ronald R., graduated University of Toronto, 1922. Practised dentistry in Kingsville, Ontario for 50 years. Died October, 1979.

MURPHY, J.J., practised in Vancouver, British Columbia. Died November 12, 1979.

Brock Sharpe nommé directeur administratif

M. Hubert Drouin, directeur général de l'Association dentaire canadienne, est heureux d'annoncer la nomination de M. Brock Sharpe au poste de directeur administratif. M. Sharpe s'est joint à l'ADC le 1er décembre dernier.

M. Sharpe a suivi un cours en administration établi conjointement par l'Université Carleton et le Collège Algonquin d'Ottawa. Il est responsable de la bonne marche des fonctions administratives au bureau principal de l'Association. C'est lui également qui doit coordonner et superviser les opérations comptables et financières, gérer le personnel et surveiller la gestion des biens immobiliers du siège social de l'ADC.

Avant de joindre l'Association dentaire canadienne, M. Sharpe était directeur de l'administration et du personnel auprès d'une importante société de développement immobilier. De plus, il a déjà assumé la gérance d'un organisme fédéral chargé de promouvoir les sports nationaux. Même s'il se dit un athlète "retraité", M. Sharpe reste un fervent des sports. Il aime jouer du piano et fait partie de la Barbershop Harmony Singing Society. Il maîtrise les deux langues nationales et il a séjourné en Europe où il a beaucoup voyagé.

M. Sharpe et son épouse, Gail, ont deux filles prénommées Alison et Meredith.



M. Brock Sharpe

Les subventions aux dentistes

Selon un communiqué émanant du gouvernement de la Saskatchewan, cette province accorde des subventions aux dentistes pour les encourager à aller s'établir dans les petites villes et dans les régions rurales. C'est le Ministère provincial de la Santé qui a lancé ce programme en 1976 et, depuis, des sommes totalisant \$350,000.00 ont été octroyées. 28 régions en ont bénéficié jusqu'à maintenant.

Tout dentiste admis à pratiquer en Saskatchewan peut obtenir une subvention de \$10,000.00 ou de \$20,000.00 suivant la population qu'il compte servir.

Les subventions de \$10,000.00 sont accordées aux dentistes qui s'établissent dans des régions dont la population par dentiste est de 3,500 à 6,500 habitants. Ces dentistes doivent s'engager à demeurer au moins deux ans et demi dans la région choisie.

Les subventions de \$20,000.00

sont accordées à ceux qui établissent leur pratique dans les régions qui compte plus de 6,500 habitants. Ils doivent rester au même endroit au moins cinq ans.

Les subventions sont payées à raison de \$1,000.00 quatre fois l'an et elles sont coupées dès qu'un dentiste quitte avant le terme convenu la région qu'il avait consenti de servir.

Les assemblées de l'AFDC

La XI^e Conférence biennale sur la Recherche et l'Enseignement dentaires au Canada aura lieu en même temps que les Assemblées de l'ACFD/AFDC qui se tiendront à l'Université McGill, à Montréal, du 15 au 20 juin 1980. Au programme sont prévues deux séances d'une demi-journée chacune sur la manière d'utiliser les ordinateurs dans les écoles dentaires (enseignement, évaluation, utilité clinique et adminis-

Cliniques mobiles

Dix cliniques dentaires mobiles parcourent l'Ontario. Gérées par le Ministère de la Santé de cette province, ces cliniques motorisées fournissent les principaux soins aux enfants des régions qui sont mal servies sur le plan dentaire et elles appliquent des mesures préventives à leur intention.

Le Dr P.C. Wong a récemment été affecté à la clinique mobile de Lanark et le Dr Don Somerville, à celle de Bonfield. Le Dr Alex Mclean s'est dernièrement établi à Chapleau.

Quant au Dr Tony Nejman, il a remis sa démission et ne fait plus partie de l'équipe des cliniques mobiles.

trative). Elles seront présidées par le Dr Richard Mackenzie, de l'Université de la Floride. Une autre séance d'une demi-journée sera consacrée à la conférence intitulée

"The Grant Connection" et prononcée par le Dr W.O. Spitzer, directeur du Centre d'études supérieures en soins primaires W.K. Kellogg, de l'Université McGill.

Chicoine nommé membre du conseil

Le Dr Claude Chicoine, président de l'Association des chirurgiens dentistes du Québec, a récemment été

nommé membre du conseil administratif de la Régie de l'assurance-maladie du Québec.
Diplômé de la Faculté de dentisterie de l'Université de Montréal en 1969, le Dr Chicoine est président de l'ACDQ depuis 1975. Par deux fois, soit en 1972 et en 1973, il a fait partie du comité organisateur

du Congrès de l'Association dentaire canadienne et, en 1972, il agissait comme un des gouverneurs de l'Ordre des dentistes de Québec.
De plus, le Dr Chicoine a contribué à promouvoir le congrès dentaire provincial, les Journées dentaires du Québec.



Dr Claude Chicoine

Régime d'épargne-retraite de l'ADC

Les valeurs respectives du Régime d'épargne-retraite de l'Association Dentaire Canadienne étaient les suivantes au 31 décembre 1979.

<i>Fonds d'actions ordinaires</i>	\$44.894
<i>Fonds à revenu fixe</i>	\$22.275
<i>Fonds garanti</i>	\$16.813
<i>Fonds de placement équilibré</i>	\$11.639

L'avoir total (valeur marchande) du régime s'élevait à \$34,063,651.

Au 30 novembre 1979, les chiffres du mois précédent étaient les suivants:

<i>Fonds d'actions ordinaires</i>	\$42.609
<i>Fonds à revenu fixe</i>	\$22.088
<i>Fonds garanti</i>	\$16.643
<i>Fonds de placement équilibré</i>	\$11.263

L'avoir total (valeur marchande) du régime s'élevait à \$33,090,154.

Pour obtenir tout renseignement supplémentaire, prière de s'adresser aux: Régimes des rentes et d'assurances subventionnés par l'ADC, P.O. Box 7500, Station A, Toronto, Ontario M5K 1A0.

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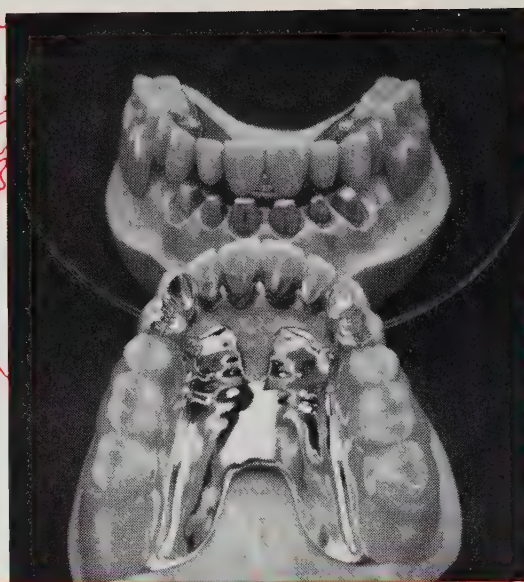
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Clifton E. Crandell, ed.

Comprehensive Care in Dentistry

*Dental Data Centre,
University of North Carolina*

This text is one of the Post-graduate Dental Handbook Series that the editor hopes will fill a void felt by dental clinicians and investigators alike. **Comprehensive Care in Dentistry** attempts to give some definition to the term comprehensive care which is part of every general practitioner's daily life and which requires a great deal of organization and planning. The book provides the dentist with the means of accomplishing this end more easily.

Dr. Crandell and his contributors point out the responsibilities of the general practitioner, patient attitudes, the records necessary for comprehensive care and computer support systems. The responsibility of the dentist to the public, the utilization of auxiliaries, as well as the patient's point of view and his attitudes toward the dentist are discussed in some detail by the author. Dr. Crandell is critical of the dental schools in that they have failed to some degree in providing the student with a satisfactory comprehensive care program. Since the curriculum of most schools has been based on the "point and block system" one can readily see that while this is beneficial in teaching specific clinical skills, it tends to forget about the patient as a whole.

The author devotes much time to discussing proper records essential for comprehensive care. Standardization is stressed. Records can be of assistance in the

quality of care as well as for routine progress reports. Computers are here to stay, not only as a billing and filing tool, but to evaluate student performances, treatment planning and managing comprehensive care. Dental schools in North Carolina, U.C.L.A., and Iowa are clinical examples of schools where computers are used throughout the student's clinical studies.



Dr. Jim Logue

One cannot fail to acquire some tidbits of useful knowledge from this text which may be helpful in a general practice. The thoughts on standardization of records, their relationships with third party insurance and the increasing use of the computer in our profession make this book worthwhile reading. Certainly the dental educator and student will benefit from the concepts presented herein.

Comprehensive Care in Dentistry

was reviewed by Dr. Jim Logue, a general practitioner in Wolfville, Nova Scotia.

J. Kostlan

Oral Health Services in Europe

*A Publication of the
World Health
Organization*

This publication provides a comprehensive survey in the oral health services provided in the European Region of the WHO. A country by country survey forms the core of the report which is introduced by a general review of oral health services in Europe and concludes with a comprehensive examination and discussion of key areas of growth or constraint.

The survey from each country begins with a general introduction covering basic oral health services and branches into a section on the management of the oral health service, provision of oral health services, delivery of oral care, current problems and future plans.

The discussion portion of the report deals with such interesting topics as: Integration of General Health and Oral Health Services; The Teamwork Concept in Oral Health Services; Strategy in Developing the Oral Health Services; Quality of Care; Types of Oral Health Personnel and Their Education; Utilization of Dental Auxiliaries; Introducing Prevention in the Community.

Certainly this book will be of interest to dental educators, dentists and dental auxiliaries and the professional bodies representing these people.

Oral Health Services in Europe

was reviewed by Elaine Wesley, C.D.A., executive director, Canadian Dental Nurses and Assistants' Association.

Dental health status of Alberta schoolchildren

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ABSTRACT

This report presents data obtained from an Alberta dental survey of 6-7 and 13-14 year old schoolchildren. The data were gathered during 1978 by means of a multistage, random sampling technique involving over 2,500 children from 18 health units. Results indicate that for the age groups examined, the dental health status is somewhat better than previously thought. The level of oral hygiene is comparable to similarly aged Ontario children. Fewer than one per cent of the 13 and 14 year old children required periodontal care beyond professional plaque removal and minor scaling. Dental caries attacked a large number of children though the attack rate is moderate. For the permanent dentition the F/DMFT treatment ratio tended to be higher than expected, averaging 67.8 percent over all 13 and 14 year olds examined. No children in the older age group either wore or required a full denture.

Voici les données d'une étude faite en Alberta à des fins dentaires sur des élèves de six à sept ans et de 13 à 14 ans. Les données furent recueillies au cours de l'année 1978 selon une technique d'échantillonnage appliquée à plusieurs moments différents sur des sujets choisis au hasard. Plus de 2,500 enfants, provenant de 18 régions, ont été examinés. Les résultats indiquent que, pour chacun des groupes, l'état de santé dentaire est un peu meilleur qu'on l'avait d'abord pensé. L'hygiène buccale de ces étudiants est comparable à celle des étudiants ontariens du même âge. Moins de un pour cent des enfants de 13 à 14 ans nécessitent du dentiste des soins périodontiques autres que l'enlèvement de la plaque dentaire et du tartre. Un grand nombre d'enfants ont des dents cariées, mais le taux des caries reste moyen. Pour la dentition définitive, l'indice des traitements CAO(D) tend à être plus élevé que prévu, atteignant 67.8 pour cent pour l'ensemble des enfants de 13 à 14 ans qu'on a examinés. Aucun d'eux ne porte un dentier complet ni n'en a besoin.

Two converging events in 1976 provided the impetus for the dental survey of Alberta schoolchildren. One of these was the joint action by the Health Unit Association of Alberta and the Alberta Department of Social Services and Community Health in establishing a Task Force on Dental Services as well as a Records Committee to study ways to generally upgrading the dental activities of the Alberta health units. (In particular, the Task Force was charged with establishing "minimum dental program standards which can be developed for local health authorities" and other related specific aims.) Secondly, the University of Alberta Senate issued the "Report of the Committee on Dental Services to Rural Areas," a wide-ranging document that tried to pull together available information on dental health and dental services in Alberta, with particular reference to the rural areas. Both the Task Force and the University Committee acknowledged substantive data on the dental health status and treatment needs of Alberta children were lacking.

Dental surveys are conceptually fairly simple but in practice, they are deceptively difficult and costly to undertake. Individual health units do not have the manpower, resources or expertise to undertake such work and even if they could, the problem of comparability of survey objectives, criteria, standards and sampling methodology, factors which usually render impossible the pooling of such dental data, would remain. Recent experiences in Canada have confirmed the futility of relying on dental data collected by regionally selected personnel¹ as well as the advantages of relying on a single, trained examination team to gather dental data from different regions.^{2,3}

During the planning phase of the project, the Task Force made a key decision to use a survey instrument

developed essentially by the World Health Organization in collaboration with the United States Public Health Service. This action, as well as that relating to the calibration of the clinical examiners to the epidemiological standards of the WHO dental unit, ensured the project would be conducted using well-tested principles, and that the Alberta findings could be compared to those of Manitoba, Ontario and Quebec (where WHO inspired dental surveys were recently carried out). Indeed, the data generated by the Alberta dental survey may be screened and sifted, before putting them to use in the planning process, by critically comparing them to results obtained in the WHO international collaborative study on dental health involving Australia, Japan, New Zealand, Norway and West Germany as well as the later replication study in the Baltimore area of the United States. Alberta health planners will be able to develop better dental health policies because the relevant health status of Alberta schoolchildren can be evaluated in both absolute and relative terms against the background of significant quantities of comparable national and international data.

The Alberta survey employed a sampling protocol based primarily on the type used by the National Center for Health Statistics⁴. The survey methodology was designed as a highly stratified multi-stage sampling of approximately 2,400 non-institutionalized children six to seven and 13 to 14 years of age. The northern, central and southern parts of Alberta formed the initial strata. Other stratifying variables were metropolitan (250,000 population or greater), urban (10,000 to 249,000), and rural (500 to 9,999) communities; and socio-economic characteristics of neighbourhoods (in Calgary and Edmonton only). Within strata, school boards became the first stage sampling unit, schools the second stage and classrooms the final sampling unit. All children in the selected final units were examined. Finally, the grouping of children according to family socio-economic status was achieved using "post-selection" stratification based on information obtained for each subject at the time of the oral examination. This approach, using several stratifications and more than two sampling stages, has found wide acceptance in survey practice. Its

crucial advantages are that it results in a concentration of fieldwork and consequently in a saving of time, labour and money and it obviates the necessity of having a sampling frame covering the entire population.

The clinical examinations were done by four teams of examiners with one dentist and one recording assistant per team. Both the examiner and the assistant were specially calibrated for three days prior actual field work.

The objectives of calibration are given by the WHO as: (a) to ensure uniform interpretation, understanding and application of the criteria for the various diseases and conditions to be observed and recorded and; (b) to ensure that each examiner can examine to a consistent standard and that variations between different examiners are minimized.

The examinations were carried out in schools using a portable Adec dental chair, a Rolux fibre-optic dental

Table 1						
Dental Health Survey Sample Distribution among Alberta Health Units 6, 7, 13 and 14 Year Old Schoolchildren						
			Children Examined In The Dental Survey			
Health Unit*	5-14 Yr. Old Pop'N	Percent of Total	No. of 6-7 Yr. Olds	No. of 13-14 Yr. Olds	Both Groups Combined	Percent of Total
Alberta East/Central	11,307	3.2	32	33	65	2.6
Athabasca	6,621	1.9	36	39	75	3.0
Barons-Eureka	6,792	1.9	21	40	61	2.4
Calgary	99,476	28.0	313	274	587	23.1
Chinook	5,468	1.5	32	39	71	2.8
Edmonton	96,314	27.1	316	333	649	25.6
Edson	7,087	2.0	41	39	80	3.2
Grande Prairie	9,676	2.7	26	36	62	2.4
Jasper	866	0.2	40	45	85	3.4
Leduc	18,111	5.1	42	51	93	3.7
Lethbridge	8,812	2.5	54	49	103	4.1
Medicine Hat	12,966	3.6	39	61	100	3.9
Mount View	9,583	2.7	45	60	105	4.1
Peace River	16,626	4.7	45	43	98	3.9
Red Deer	17,870	5.0	40	41	81	3.2
Sturgeon	17,271	4.9	43	41	84	3.3
Vegreville	3,078	0.9	34	42	76	3.0
Wetoka	6,932	2.0	37	36	73	2.9
Total**	354,856	100.0	1,236	1,302	2,538	100.0
*The selected health units represent a total population, estimated in 1976, of 1,603,531 persons. **Percentage totals may not add up to 10 due to rounding. Source for population data from StatCan 1976 estimates.						

light, a #5 explorer, #4 mouth mirror, Williams periodontal probe, cotton plier, 2 x 2 gauzes, disposable examination gloves, etc. The examination criteria used were those described in the WHO manual written to accompany the form for the International Collaborative Study. This detailed manual describes explicit criteria and standards used in recording various dental conditions. Modifications made for the Alberta survey were minor. It was felt slight improvements were made in describing periodontal conditions and treatment needs. Certain items of particular relevance to Alberta were added to the form. But none of these changes touched on the caries section, which followed the WHO format religiously. In accordance with the most recent thinking on dental surveys, radiographic records were not made. Consent procedures varied according to the regulations adopted by schoolboard health officials towards other health procedures.

RESULTS

Sample Composition

Tables 1 and 2 indicate the over 2,500 six to seven and 13 to 14 year old children receiving a dental ex-

amination, constituted a representative sample of Alberta schoolchildren in elementary and junior high-school. Technical reasons dictated the survey design not include all Alberta health units into the study, although the 18 shown in Table 1 covered over 87 per cent of the Alberta population in 1976. While comparisons among health units was not an objective of this work, dental health comparisons among metropolitan, urban and rural (MUR) areas of the province were considered of primary importance from the outset and were a key factor in sample design. The obtained sample distribution over the MUR areas, shown in Table 2, indicates a highly representative group of children was included in the study. It is felt, therefore, the results to follow are accurate reflections of current dental health and present treatment needs of schoolchildren in the province.

Table 3 presents the age distribution of the children examined. The obtained sample comprised 2,538 children in the six to seven and 13 to 14 year age groups, which compares favorably with the projected sample size of 2,400. The fact that all six and seven year old children were from grade one tends to force the six year olds to be "older" six year olds and the seven year olds to be "younger" seven year olds. The same holds true of 13 and 14 year olds constituting the grade eight sample. The examinations took place in February, March and April, 1978.

Oral Hygiene

Table 4 and 5 present commonly used measures of oral hygiene in the six to seven and 13 to 14 year old

Table 2

Dental Health Survey Sample Distribution

	Population Distribution* n=1,838,037	Sample Distribution n=2,538
Calgary	25.6%	23.1%
Edmonton	25.1%	25.6%
Non-Metropolitan Alberta	49.3%	51.3%

*Based on StatCan. 1976 estimates.

Table 3

Alberta Dental Survey Sample by Age and Sex

Age	Male	Female	Total
6	478	458	936
7	175	125	300
6+7	653	583	1,236
13	423	482	905
14	210	187	397
13+14	633	669	1,302

Table 4

Distribution of Debris Scores among 6 and 7 Year Old Alberta Schoolchildren

	Percent		
Debris Index	Males n=265	Females n=268	Combined n=533
0.0	6.8	7.8	7.3
0.01-0.49	6.0	7.8	6.9
0.50-0.99	29.8	38.1	34.0
1.00-1.49	45.3	38.4	41.8
1.50-1.99	8.3	5.2	6.8
2.00 & over	3.8	2.6	3.2
Mean Score	0.94	0.83	0.89
Std. Dev.	0.47	0.43	0.46

Difference males vs females, significant $p < 0.01$

children. The index used by the WHO was the Oral Hygiene Index (Simplified) (OHI(S)) which separately measures soft debris and calculus present on a surface of each of six specifically determined teeth. The debris and the calculus measures may each vary between 0 (no deposit) and three (more than two-thirds of the tooth covered), while the OHI(S) representing the sum of the debris and calculus scores may range from 0 to six. It should be observed that for the six to seven year group only the debris component of OHI(S) is scored while both debris and calculus components are measured in the older children allowing the calculation of a true OHI(S) for this group.

Tables 4 and 5 provide three bits of information. First, in line with expectation, females tend to have cleaner teeth — a difference that is statistically significant in both age groups. Second, the debris scores in six to seven year olds are considerably higher than the combined debris and calculus scores in the 13 to 14 year olds. Third, the overall mean scores for the debris index and oral hygiene index are higher than one would prefer but lower than has been recorded for some other Canadian surveys.

Table 6 focuses on two separate points concerning the oral hygiene situation among the 13 to 14 year old

Table 5			
Distribution of Oral Hygiene Index (s) Scores among 13 and 14 Year Old Alberta Schoolchildren			
	Percent ^a		
OHI (S) Index	Males n=633	Females n=669	Combined n=1,302
0.00	2.8	4.5	3.7
0.01-0.49	15.3	26.1	20.9
0.50-0.99	40.5	45.0	42.8
1.00-1.49	30.9	15.6	23.2
1.50-1.99	6.4	3.4	5.0
2.00-2.49	0.7	0.9	0.8
2.50 & over	0.2	0.0	0.1
Not scored	3.5	4.0	3.8
Mean Score	0.81	0.64	0.72
Std. Dev.	0.42	0.40	0.42
^a Columns not adding to 100 due to rounding errors. Difference males vs females, significant, p<0.01			

students. First, the table shows a simple analysis of variance for the OHI(S) is not significant among children grouped by residency in metropolitan-urban-rural communities. The same test applied to the debris component only, shows significant difference among the three groups but, contrary to expectation, the rural group had the lowest debris score. A second element brought out by **Table 6** is that calculus contributes very little, on the average, to the oral hygiene scores of 13 to 14 year old children. In this regard, results from the Alberta survey are consistent with similar findings by Hunt et al³ and Bonito⁵ in two WHO replication surveys in Ontario and Baltimore respectively.

Tables 7 and 8 show the relationship of socio-econom-

Table 6				
Oral Hygiene Index among 13 and 14 Year Old Alberta Schoolchildren Residing in Metropolitan, Urban and Rural Communities				
		Index Mean		
Community	n	Debris	Calculus	OHI (S)
Metropolitan	576	0.67	0.06	0.73
Urban	199	0.72	0.05	0.77
Rural	479	0.62	0.07	0.69
Total	1,254	0.66	0.06	0.72
ANOVA for debris significant, p<0.01				

Table 7		
Debris Index among 6 and 7 Year Old Alberta Schoolchildren Grouped by the Blishen Socio-Economic Index		
Blishen Group	n	Mean Debris Index
1	21	0.76
2	54	0.75
3	51	0.73
4	54	0.89
5	118	0.93
6	85	0.96
7	45	0.93
Total	428	0.88
ANOVA significant, p 0.05 Linear term for means significant, p<0.01		

Table 8				
Oral Hygiene Index among 13 and 14 Year Old Alberta Schoolchildren Grouped by the Blishen Socio-Economic Index				
		Index Mean		
Blishen Group	n	Debris	Calculus	OHI (S)
1	33	0.65	0.04	0.69
2	257	0.62	0.05 ^a	0.67 ^a
3	154	0.62	0.06	0.68
4	177	0.62	0.05	0.67
5	281	0.68	0.07	0.74
6	193	0.75	0.07	0.81
7	111	0.70	0.09	0.79
Total	1,206	0.66	0.06	0.72
ANOVA for debris and OHI (S) significant, $p < 0.01$ Linear term for OHI (S) and both component means significant, $p < 0.01$ ^a Based on $n = 256$				

ic standing to the levels of oral hygiene. Both for the grade one schoolchildren and grade eight students, the analysis of variance indicates socio-economic standing has significant bearing on oral hygiene maintained by the average child in the subgroup. In both cases, poorer oral hygiene is found among children from lower socio-economic groups.

Periodontal Disease

The periodontal index was recorded using the modified Russell index. The widely adopted modification consists of scoring a tooth as three when gingivitis with a periodontal pocket of three to six mm is observed. Because the survey did not make use of x-rays, Russell's category four was not invoked. **Table 9** indicates that among 13 to 14 year old children (the only ones for which the index is scored), 60 per cent of individuals had scores below 0.75 while the mean score was 0.65 (a moderately low score in comparison with similar studies elsewhere). In fact, the distribution of the periodontal index scores indicates true periodontal disease is not a major problem this age category, rather, a mild, reversible marginal gingivitis is the most commonly occurring condition.

Indicative of the high standard of work achieved by the four clinical examiners, it is worth noting that the difference in the periodontal index between males and females is statistically significant and favours the females, a pattern reproduced from the observations on oral hygiene. Because of the well-known correlation between oral hygiene and gingival health, a correlation coefficient which came to 0.40 for the 1,248 students examined, this is not an unexpected result.

Table 10 shows that periodontal index scores are equivalent in 13 to 14 year old children residing in Alberta metropolitan, urban, and rural communities.

Dental Caries

It is common for dental surveys to focus on the dental caries question more than on any other. This emphasis is

Table 9			
Distribution of Russell Periodontal Index Scores among 13 and 14 Year Old Alberta Schoolchildren			
	Percent		
Russell's Periodontal Index	Males n=633	Females n=669	Combined n=1,302
0.00	0.6	1.9	1.3
0.01-0.24	9.6	13.0	11.6
0.25-0.49	22.1	27.1	24.7
0.50-0.74	22.6	23.2	22.9
0.75-0.99	17.1	12.6	14.8
1.00-1.24	16.9	12.6	14.5
1.25-1.49	3.8	3.1	3.5
1.50 & over	3.6	2.1	2.8
Not Scored	3.8	4.5	4.1
Mean Score	0.69	0.60	0.65
Std. Dev.	0.38	0.37	0.38
Difference males vs females, significant, $p < 0.01$			

Table 10		
Russell's Periodontal Index among 13 and 14 Year Old Alberta Schoolchildren residing in Metropolitan, Urban and Rural Communities		
Community	n	Mean Periodontal Index
Metropolitan	572	0.65
Urban	199	0.64
Rural	477	0.64
Total	1,248	0.65

of course justifiable on the basis that the dental care delivery system spends most of its resources in the treatment of caries. Further, the prevention and treatment of dental decay should constitute the prime objectives of most dental programs in the Alberta health units.

Table 11 shows the decayed (d), extracted (e) and filled (f) teeth (deft) index for six and seven year old children. The overall deft score of 4.0 is moderately high in children of this age. This is particularly so when it is recognized that 342 or 27.7 per cent of the 1,236 elementary schoolchildren examined had a deft of 0. This suggests that in those children who had any caries at all, the average number of deciduous teeth attacked is closer to 5.5 teeth. Similarly, 658 or 53.2 per cent of the children had no active decay in the primary dentition at all, implying that those children who had one or more teeth decayed had an average of 3.5 teeth so affected. What is also disturbing about the data in **Table 11** is that the number of frankly decaying teeth is quite high relative to the overall caries attack rate. This may indicate a genuine lack of appreciation by parents of the importance of deciduous dentition or, a reluctance on the part of parents to obtain restorative care for their children's deciduous teeth.

Table 12 outlines the caries prevalence in the permanent dentition by means of the decayed (D), missing (M), and filled (F) teeth (DMFT) index. The table contains a considerable amount of relatively important information. It shows that caries of permanent dentition of six to seven year olds appears to be low, which it is, on the average. However, fully 969 or 78.4 per cent of these children have a zero DMFT which means children with one or more permanent teeth affected have an average of two DMF teeth. Conversely, 21.6 per cent of children in this age group account for 100 per cent of the caries in permanent teeth.

Still on **Table 12**, the DMFT for 13 to 14 year olds is moderate to low in comparison to the WHO studies of similarly aged children elsewhere. Also, missing teeth rate of 0.2 per child is encouraging. As with the younger

children, it is worth observing that of 1,302 teenagers examined, 97 or 7.5 per cent were free of caries experience. Under this condition, those children with one or more DMF teeth had an average of 5.3 DMF teeth against an overall 4.9, which represents a relatively modest shift. The same is not true of the individual DMFT components. For example, 622 of 1,302 students had D components of zero. This suggests that those children with one or more permanent teeth decayed have, on the average, 2.6 teeth involved or double the overall average of 1.3. **Table 12** also shows that in an eight year interval, the "annual" caries increment of 0.62 teeth is relatively modest even if it can be improved upon.

Of considerable interest is the comparison of caries rates between urban and rural areas of Alberta. **Tables 13 and 14** attempt to shed some light on this question. The two tables show that for the deciduous and the permanent dentitions respectively there is no significant difference among metropolitan, urban and rural groups insofar as overall caries experience indices, deft and DMFT, are concerned. A closer examination of certain components within the tables indicates the decayed com-

Table 11						
Caries Experience in the Primary Dentition of 6 & 7 Yr. Old Alberta Schoolchildren						
Age (Yrs.)	n	1° Teeth Present	Mean Number Per Child			
			d	e	f	deft
6	936	16.8	1.5	.2	2.0	3.8
7	300	14.7	1.9	.3	2.4	4.7
6+7	1,236	16.3	1.6	.2	2.1	4.0

Table 12						
Caries Experience in the Permanent Dentition of Alberta Schoolchildren						
Age	n	2° Teeth Present	Mean Number Per Child			
			D	M	F	DMFT
6	936	5.1	.25	.00	.08	.34
7	300	7.5	.49	.02	.21	.71
13	905	26.3	1.25	0.17	3.31	4.74
14	397	26.9	1.56	0.23	3.57	5.37

Table 13						
Caries Experience in the Deciduous Dentition of 6 and 7 Year Old Alberta Schoolchildren residing in Metropolitan, Urban and Rural Communities						
Community	n	1° Teeth	Index Mean			
			d	e	f	deft
Metropolitan	631	16.4	1.5	0.2	2.2	3.9
Urban	193	16.5	1.6	0.2	2.1	3.8
Rural	412	16.1	1.9	0.3	2.1	4.3
Total	1,236	16.3	1.6	0.2	2.1	4.0
ANOVA for d significant, p 0.05						

ponent of the deciduous index and the decayed and missing component of the permanent tooth index are statistically significant. However, the magnitude of these differences is not impressive.

The influence of socio-economic standing on the prevalence of caries in both the deciduous and the permanent dentition was determined and the results are tabulated in **Tables 15 and 16**. The first of the two tables focuses on the deciduous dentition in the six to seven year age group.

Table 14						
Dental Caries Experience among 13 and 14 Year Old Alberta Schoolchildren residing in Metropolitan, Urban and Rural Communities						
Community	n	2° Teeth	Index Mean			
			D	M	F	DMFT
Metropolitan	607	26.5	1.2	0.1	3.4	4.8
Urban	203	26.6	1.3	0.2	3.5	5.0
Rural	492	26.4	1.5	0.2	3.3	5.1
Total	1,302	26.5	1.3	0.2	3.4	4.9
ANOVA for DMF, D and F not significant. ANOVA for M significant, p<0.01 Linear term for D mean significant, p<0.05						

Table 15						
Caries Experience in the Deciduous Dentition of 6 and 7 Year Old Alberta Schoolchildren Grouped by the Blishen Socio-Economic Index						
Blishen Group	n	1° Teeth	Index Mean			
			d	e	f	deft
1	41	16.3	0.5	0.1	2.0	2.7
2	166	16.5	0.8	0.2	2.1	3.2
3	117	16.7	0.6	0.1	2.5	3.2
4	116	16.0	1.6	0.2	2.1	3.8
5	275	16.2	1.8	0.3	2.1	4.2
6	183	16.3	2.1	0.3	2.2	4.7
7	89	15.9	2.4	0.2	1.5	4.2
Total	987	16.3	1.5	0.2	2.1	3.9
ANOVA for d and deft significant, p<0.01 Linear term for d and deft means, significant, p<0.01						

The results are fairly clear in showing that there is a tendency for the overall deft index to be higher in the lower socio-economic groups. But in particular this trend is most evident when looking at the decayed component, or the frankly decaying teeth. With the exception of one reversal, the mean number of decayed deciduous teeth rise with lower socio-economic standing. Tests of statistical significance bear out these relationships as **Table 15** indicates. While the overall deft index was 3.9, children of farmers, as a single group, presented with a mean deft index of 3.8 (n=74).

Table 16 takes a similar look at the permanent dentition in the 13 to 14 year age group. The results are less clear cut. A simple analysis of variance shows no differences among overall DMFT scores, or component M or F contributions. The differences among the means of the decayed tooth component were statistically highly significant.

Table 17 shows the dental caries data organized according to whether subjects presently lived in fluoridated or non-fluoridated communities. First of all, the proportion of children in the sample residing in fluoridated communities roughly conforms to the 45 per cent usually reported for the Alberta population as a whole. The caries difference, while statistically significant at the p<0.01 level, is not as large as expected. To study the fluoride question adequately would require taking residency histories considerably more detailed and precise than those used in this study.

Table 16						
Caries Experience among 13 and 14 Year Old Alberta Schoolchildren grouped by the Blishen Socio-Economic Index						
Blishen Group	n	2° Teeth	Index Mean			
			D	M	F	DMFT
1	36	26.1	1.5	0.2	2.9	4.6
2	271	26.5	1.0	0.1	3.5	4.6
3	160	26.6	1.3	0.1	3.5	5.0
4	185	26.4	1.1	0.2	3.5	4.8
5	291	26.5	1.4	0.2	3.3	5.0
6	197	26.4	1.6	0.3	3.6	5.4
7	113	26.8	1.9	0.2	3.0	5.1
Total	1,253	26.5	1.3	0.2	3.4	4.9
ANOVA DMF, M and F not significant. ANOVA D significant, p<0.01 Linear term for D mean, significant, p<0.01 Linear term for M and DMF means, significant, p<0.05						

The F/DMFT Ratio

Although a flawed and simplistic notion, the F/DMF teeth ratio is often used as a measure of dental restorative treatment received. Nevertheless, for the purpose of the present analysis it is sufficient to accept the notion that a high F/DMFT ratio is desirable while a low ratio indicates a less desirable situation. It should be obvious that F/DMFT and D/DMFT will most commonly, though not inevitably, be inversely related. Finally, all persons with zero DMFT are eliminated from the analysis since they cannot contribute a ratio to the computations.

Table 18 shows DMFT component ratios grouped by the 13 to 14 year old children's reported residency. This table shows the average F/DMFT ratio among the 1,205 children with at least one or more DMF teeth was 67.8 per cent. The results show rural children had a slightly lower tendency to receive fillings for decayed teeth. The statistical tests bear this out and further, indicate there might be a slightly higher tendency in the rural areas to resort to extraction as a form of treatment for caries. On the whole however, the magnitude of these differences is small when examined through the clinical rather than the statistical eye.

Turning to the influence of socio-economic standing, it has been repeatedly shown that while SES is not consistently correlated with caries experience, it is strongly associated with the F/DMFT treatment ratio. The Alberta F/DMFT results in Table 19 confirm this pattern, although the relationship is less clear-cut than reported elsewhere. In looking at the F/DMFT ratio means grouped by Blishen scores, the data seem to indicate that children in groups one to four enjoy a slightly superior treatment ratio than do those from groups five to seven. In Table 19, it is the M/DMFT that seems to show the cleanest trend, however. A simple examination of the M/DMFT mean percentages shows how these

Table 17						
Caries Experience among 13 and 14 Year Old Alberta Schoolchildren residing in Fluoridated and Non-Fluoridated Communities						
Community	n	2° Teeth	Index Mean			
			D	M	F*	DMFT**
Non-Fluoridated	700	26.6	1.4	0.2	3.6	5.2
Fluoridated	602	26.4	1.3	0.2	3.2	4.6
Total	1,302	26.5	1.3	0.2	3.4	4.9

* Difference significant, p<0.05
**Difference significant, p<0.01

consistently rise the lower the socio-economic standing, with the lowest group presenting the sole exception. Group seven would perhaps show both a higher M/DMFT and F/DMFT if it made more visits to the dentist, thereby reducing the noticeably higher D/DMFT in that group.

DISCUSSION AND CONCLUSIONS

Much effort was devoted to obtaining a sample of schoolchildren truly representative of the Alberta population for the age groups selected. In effect, the children were drawn from 18 randomly chosen health units

Table 18				
DMFT Component Ratios among 13 and 14 Year Old Alberta Schoolchildren residing in Metropolitan, Urban and Rural Community				
Community	n	Percent		
		D/DMFT	M/DMFT	F/DMFT
Metropolitan	559	28.2	2.2	69.6
Urban	186	26.1	2.9	71.0
Rural	460	32.1	3.5	64.4
Total	1,205	29.4	2.8	67.8

ANOVA F/DMF significant, p<0.05
Linear term for M/DMFT mean significant, p<0.05

Table 19				
DMFT Component Ratios among 13 and 14 Year Old Alberta Schoolchildren grouped by the Blishen Socio-Economic Scale				
Blishen Group	n	Percent		
		D/DMFT	M/DMFT	F/DMFT
1	34	29.1	1.5	69.4
2	253	23.9	1.6	74.4
3	152	28.7	1.8	69.5
4	166	26.8	2.7	70.6
5	272	31.2	3.2	65.6
6	184	29.6	4.2	66.2
7	99	42.7	3.4	53.9
Total		29.3	2.7	68.0

ANOVA for D/DMFT and F/DMFT significant, p<0.01
Linear term significant for all three ratio means, p 0.01

which themselves contained 87 per cent of the Alberta population in 1976. Particularly important for the purpose of this study, a proper balance was maintained in the relative frequency of children from the metropolitan, urban and rural regions. Further, roughly similar frequencies of males and females were examined. Finally, the choice of only two age groups six to seven year olds and 13 to 14 year olds ensured different internal comparisons were achieved with relatively large subclass frequencies. Since the progression of DMFT from the six year old to the 14 year old is close to being linear⁶, little information is lost, while much is gained by considering only these two age groups. The World Health Organization calls such investigations "pathfinder" surveys. The concept is to limit the age groups of children examined such that oral health status is determined at entry to and exit from junior schools. Such a method "is intended to be an economical and practical way of obtaining data for health service planning. . . ."

A common objective of certain types of dental public health programs is the improvement of oral hygiene and the reduction of gingival inflammation. The Alberta data which bear on these parameters indicate the children demonstrate a mean level of dental plaque which compares with the best reported in other, similar studies in Canada.^{3,8} With an average debris score of 0.89 for the six to seven year olds and 0.72 for the 13 to 14 year olds, one question Alberta dentists have to ask themselves is whether, to what extent, and by what means, public programs ought to be undertaken to reduce the dental plaque levels further. If such programs are deemed worthwhile, it is critical that a specific goal be set (such as a target index) in order to assess whether the putative program is in fact attaining its objective after a certain period. Do the data indicate any specific groups at which antiplaque programs should be aimed? On the whole, it would appear that children living in the lower socio-economic regions, both in cities and in rural areas, are most in need of attention. Similarly, boys show more need than girls. Thirdly, six to seven year olds have higher plaque levels than teenagers. Not surprisingly, these are precisely the groups with whom it would be most difficult to make progress. For this reason, if any program were contemplated, it would have to be shown to be of the type that will lead to improvement in the very groups most in need of attention.

Gingivitis is a disease condition closely associated with the presence of dental plaque. In this survey, gingivitis was measured using a modified Russell's periodontal index. Because few 13 to 14 year old children demonstrate true periodontal disease, Russell's P.I. is perhaps not the index of choice. However, because index scores of 0, one and two do measure the presence of gingivitis and to preserve comparability with other studies, it was decided to go along with the WHO's choice of index. The Alberta results demonstrate that while gingivitis is

ubiquitous, only 1.3 per cent of children were free of it, the average severity is relatively moderate.

From the perspective of dental health programs, the close association of reversible gingivitis with oral hygiene is an advantage in that whatever programs are designed to reduce dental plaque will have an ameliorative effect on gingivitis and *vice versa*. Program choice and target groups are subject to the same criteria as for oral hygiene improvement programs.

Dental caries data are of major importance for dental program planning. The fact that the average six to seven year old child presented with a mean of 4.0 decayed, missing or filled primary teeth suggests a moderately high caries rate. The fact that 27.7 per cent of the children had no caries experience in the primary teeth examined underlines the fact that those children with one or more carious primary teeth had a mean deft of 5.5. Similarly, although the average number of frankly decaying primary teeth was 1.6, considering only the 53.2 per cent of the children with one or more actively decaying primary teeth revealed that such children presented with a mean of 3.5 frankly decaying primary teeth. Further analyses concerning caries experience in primary dentition showed no statistically significant difference in the deft among metropolitan, urban and rural children. However, an examination of the deft's decayed teeth component indicated rural children seemed to have a statistically significantly greater number of primary teeth in need of treatment, although this difference (0.4 decayed teeth between rural and metropolitan children) is a modest one from a clinical perspective.

That the caries experience in primary dentition should vary inversely with socio-economic status, is consistent with intuitive thinking and results reported in some, but not all, similar Canadian studies. In particular, Alberta's experience seems to match that of Quebec's while in both Ontario and Manitoba statistically significant relations between deft and SES were not detected in children aged nine years and under. What seems to be particularly noteworthy in the Alberta data is that the deft-SES relation is accounted for in large part by the frankly decaying teeth component of the index.

As far as the permanent teeth in both the six to seven and 13 to 14 year age groups are concerned, the results give rise to some optimism. As expected, of course, relatively few children (22 per cent) in the six to seven year old groups presented with any carious permanent teeth. Unfortunately, this particular subgroup had a mean of two DMF teeth, suggesting that even as early as grade one a group of children with higher than average susceptibility to permanent tooth caries might be identified.

Turning to the 13 to 14 year age group, the overall DMFT of 4.9 is relatively moderate both from the perspective of prior expectation as well as comparable

studies elsewhere. Before discussing this in detail, there is a point to be raised concerning the appropriate figure for a provincial average DMFT rate. The given figure is 4.9 but from **Table 12** it can be determined that this is a weighted average reflecting the disease level in the numerically larger 13 year old group. It might be suggested that a more appropriate estimate is the simple average of 5.06 DMFT. Whichever figure is chosen, the encouraging aspects of the observed DMFT remain and include the fact that the average missing tooth rate was a low 0.2, 48 per cent of 13 to 14 year old children had no active decay, and 7.5 per cent were totally free of any caries experience whatsoever. The latter two figures are, however, ones to be improved upon.

Five intra-province comparisons are of particular interest. First, there was no appreciable difference in the caries experience (DMFT) rate among metropolitan, urban and rural teenagers. **Table 14** indicates however that there was a statistically significant difference in the mean number of missing teeth among the three groups. This becomes a bit clearer when the missing teeth rates are given to two decimal place accuracy (namely, 0.13, 0.23, 0.25 for the metropolitan, urban and rural teenagers respectively.) On a group basis, there is also some suggestion the average number of actively decaying teeth is slightly higher in the rural group, but the magnitude of the difference is not particularly noteworthy. A second comparison involves socio-economic class. Here, the inverse relationship between caries experience (DMFT) and SES was feeble. The one-way analysis of variance revealed no differences among groups while simple linear regression, both on individuals ($b=0.12$) and groups showed a statistically significant relationship ($p<0.05$). But from a clinical perspective, the differences were not impressive. It is interesting to note the range in DMFT means was only 0.8, the difference between the highest and lowest of the seven mean scores. That is identical to the value obtained by Hunt et al³ in their comparison of parental educational achievement and mean DMFT scores. The Alberta data exhibit a somewhat stronger relationship, however, between the mean number of frankly decaying teeth and socio-economic status, as **Table 16** indicated.

The caries experience index for 13 to 14 year olds was significantly different between fluoridated and non-fluoridated communities ($p<0.01$). At the same time, the actual magnitude of this difference was smaller than expected for three reasons. First, the study was not designed to evaluate the effect of water fluoridation. It did not seek to compare children who had been born, raised and continue to live in fluoridated communities with those who fulfilled none of these criteria. Second, the effect of fluoride supplement consumption in non-fluoridated communities is an influencing variable which was not determined. Third, one should expect that as the DMFT prevalence level declines slowly (as seems to

have happened in Alberta and appears to be happening all over North America), the majority of decayed teeth remaining will demonstrate pit and fissure lesions. It is well known that fluorides are not as effective in preventing these types of lesions. Therefore, differences attributable to water fluoridation per se should become more modest, while remaining both statistically and clinically significant.

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Dental health status survey of Manitoba children

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a standard to evaluate the long-run effectiveness of the newly announced Manitoba Children's Dental Program.

The publication of the World Health Organization Basic Oral Health Methods^{9,10} provided a standardized, tested format by which such data could be obtained. The data would be comparable with other jurisdictions and the survey would be replicable and therefore provide data that would be comparable over time with the baseline study.

The present survey was therefore designed to meet the following objectives: i) to assess the dental health status of children in Manitoba through estimation of the prevalence of dental caries, periodontal disease and dento-facial anomalies in specified age cohorts of children using W.H.O. standardized criteria; ii) to obtain data by which previous estimates of both numbers and types of manpower required for the Manitoba Children's Dental Program could be refined, by identifying the number of specific preventive and treatment services needed in the population; iii) to measure the extent to which the existing dental health delivery system has been meeting current needs for treatment, by measuring dental service utilization and treatment levels in the sample; iv) to supply baseline data for long run evaluation of the new program.

SURVEY METHODOLOGY

The survey methodology was based on principles and procedures described in the W.H.O. Oral Health Surveys Manual, First Revision (1976)¹⁰. All survey data were recorded on a modified "Combined Oral Health and Treatment Assessment Form" (Figure 1). Certain modifications were made to the basic W.H.O. criteria to meet the objectives of the survey.

Changes in the assessment and coding of gingivitis are detailed in Table 1. Manitoba changes were based on the Gingival Index of Löe and Silness¹¹ which allowed measurement of smaller degrees of gingival inflammation than did the W.H.O. system. For purposes of comparability the modified index was designed to fit the W.H.O. format and recording facilities; Manitoba scores 0 and one correspond to W.H.O. score 0, and Manitoba scores two and three are equivalent to W.H.O. score one.

Certain modifications and additions were also made to the W.H.O. criteria for assessment of both dento-facial anomalies and dental caries status and treatment requirements. These changes are detailed in the full report⁽¹²⁾.

AIMS OF THE PROJECT

In early 1976 the Minister of Health for Manitoba announced a program to provide dental care to children would begin in September of that year. The Minister stated the program would gradually be extended to cover all children aged three to 12.

Required estimates of manpower and costs of the new program were difficult to obtain because previous surveys of children's dental health¹⁻⁴ and dental service utilization in Manitoba^{2,5-8} did not provide sufficient information to calculate the numbers and types of services that might be required. Neither were the previous data collected on a uniform base which could be used as

ABSTRACT

The revised World Health Organization Oral Health Survey Methodology was used to assess the dental health status of a sample of 1,192 Manitoba children. The survey was undertaken to provide data on the disease levels and treatment requirements of children aged five, nine, 13, and 17 to plan for and later evaluate a provincial children's dental health program. Children living in rural areas of the province and children with limited exposure to optimally fluoridated water were found to have had significantly higher caries attack rates.

On a utilisé la version revue de la Méthode de recherche en hygiène buccale (Oral Health Survey Methodology) publiée par l'Organisation mondiale de la Santé pour déterminer l'état de santé dentaire de 1,192 enfants du Manitoba choisis comme groupe représentatif. Cette étude a pour but de recueillir des données sur les taux de maladie des enfants âgés de cinq, neuf, 13 et 17 ans et sur les soins à leur apporter. Ces données serviront à établir un programme provincial de santé dentaire pour les enfants et, plus tard, à l'évaluer. On a découvert que les enfants qui habitent la campagne ou qui consomment de l'eau non fluorée au taux optimal, ont un nombre de caries remarquablement élevé.

Additional sociodemographic data were also collected (occupations of both parents and educational level attained by the mother), along with information on each child's history of exposure to fluoridated water. This information, plus data on dental service utilization, was obtained by telephone interviews with parents. This departure from W.H.O. protocol could have introduced another source of statistical error, but a response rate of over 96 per cent was achieved.

SAMPLING METHOD

Manitoba has a population of just over one million. Fifty-five per cent resides within metropolitan Winnipeg¹³. Approximately 75,000 people live in smaller urban centres such as Brandon, Thompson, Portage la Prairie. Another 100,000 reside in 35 towns with populations of between 1,000 and 10,000. The remaining 30 per cent of the population lives in smaller towns and villages or in rural municipalities. This broad range in community size was of prime consideration in developing an appropriate sampling strategy as was the closely associated characteristic of fluoridated water supplies. With the exception of Thompson, all urban centres and many of the towns have fluoridation systems such that about 70 per cent of the population currently has access to fluoridated water¹⁴.

The target population for the survey included all Manitoba children in the age range to be served by the Children's Dental Program (i.e. three through 12 years of age). Older age groups were also included for long run evaluation purposes in order to be able to demonstrate the extent to which dental health levels could be maintained after graduation from the program. The rationale behind the final selection of age groups was a

TABLE 1

GINGIVITIS DIAGNOSTIC CRITERIA																	
W.H.O. Areas examined: The papillary and marginal gingivae surrounding all fully erupted teeth in each of 6 segments; assessments in a particular segment cease as soon as a condition is detected.	MANITOBA Areas examined; Six surfaces, only one in each segment, as follows: Posterior segments — Teeth: Most anterior permanent molar; if not present the most posterior primary molar; if no primary or permanent molars are present, no score is given to the segment. Surfaces: Buccal surfaces of the selected upper molars, lingual surfaces of the lower molars. Anterior segments — Teeth: Upper right central incisor and lower left central incisor; if either of these teeth is absent, the incisor on the opposite side of the midline is used; if both missing, no score is given to the segment. Surfaces: Labial surfaces of both teeth.																
<table> <tr> <th>Score</th><th>Criteria</th></tr> <tr> <td>0</td><td>No conspicuous change or only minor deviations in gingival colour; only minor alterations in gingival form; no bleeding occurs after digital palpation.</td></tr> <tr> <td>1</td><td>Marked change in gingival colour, determined by comparing with colour of adjacent gingival tissue that is not inflamed; or if bleeding occurs on firm digital palpation.</td></tr> </table>	Score	Criteria	0	No conspicuous change or only minor deviations in gingival colour; only minor alterations in gingival form; no bleeding occurs after digital palpation.	1	Marked change in gingival colour, determined by comparing with colour of adjacent gingival tissue that is not inflamed; or if bleeding occurs on firm digital palpation.	<table> <tr> <th>Score</th><th>Criteria</th></tr> <tr> <td>0</td><td>Gingival colour is pink to pale pink; the surface after drying is matt; on palpation with a periodontal probe the gingiva should be firm.</td></tr> <tr> <td>1</td><td>Gingiva is subject to mild inflammation; gingival margin is slightly more reddish or blueish-red than normal and there is slight edema of the margin; a colourless gingival exudate may be observed or collected at the entrance of the crevice; no bleeding occurs when a probe is run along the soft tissue wall of the entrance of the gingival crevice.</td></tr> <tr> <td>2</td><td>Gingiva is moderately inflamed — red or reddish-blue and glazy; there is enlargement of the margin due to edema; bleeding is provoked when a probe is run along the wall of the entrance of the gingival crevice.</td></tr> <tr> <td>3</td><td>Severe inflammation is present, gingiva is red or reddish-blue and enlarged; tendency to spontaneous bleeding and ulceration.</td></tr> </table>	Score	Criteria	0	Gingival colour is pink to pale pink; the surface after drying is matt; on palpation with a periodontal probe the gingiva should be firm.	1	Gingiva is subject to mild inflammation; gingival margin is slightly more reddish or blueish-red than normal and there is slight edema of the margin; a colourless gingival exudate may be observed or collected at the entrance of the crevice; no bleeding occurs when a probe is run along the soft tissue wall of the entrance of the gingival crevice.	2	Gingiva is moderately inflamed — red or reddish-blue and glazy; there is enlargement of the margin due to edema; bleeding is provoked when a probe is run along the wall of the entrance of the gingival crevice.	3	Severe inflammation is present, gingiva is red or reddish-blue and enlarged; tendency to spontaneous bleeding and ulceration.
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Source: W.H.O. Oral Health Surveys — First Revision , Geneva, 1976	Source: Loe, H.: The Gingival Index, the Plaque Index and the Retention Index Systems. J. Periodontal , 1967:38: Suppl. 610-616.																

Consistent with the principals and criteria set forth in the W.H.O. manual for Pathfinder Surveys, it was decided that samples of 25 children in each of the four age groups at each of 12 locations (leading to a composite sample of 300 for each age group) would generate reliable and meaningful data to meet the objectives of the survey. The sampling design known as cluster sampling was used to randomly select a first-stage sample of 12 high schools from a sampling frame of 109 Manitoba high schools. At each location all children of the appropriate ages in the selected high school and its junior high and elementary "feeder" schools were identified from school records and a sample of 25 in each age group was selected at random. The procedure of oversampling (selecting 25 per cent more children at each location) was used to achieve complete samples in eleven of the twelve locations and a subsequent total sample size of 1,192.

The geographical distribution of the rural sampling locations was fairly even across the southern part of the province because four urban high schools were in different areas of Winnipeg and the fifth was in Brandon. Comparison of urban and rural sampling ratios indicated a slight over-representation of the rural component of the population: only 42 per cent of the child population in the four age groups was attending rural schools compared to 59 per cent of the sample. However, since rural children were expected to have a higher prevalence of caries and greater variability because of the lack of fluoridated water supplies etc., this increased sample size would help to reduce the variance and increase the precision of estimates of DMF teeth and other conditions.

The distribution of the sample according to previous exposure to fluoridated water varied considerably with age. Because of stringent requirements for 'positive' exposure and the fact that many communities only instituted fluoridation during the 1960's, a higher percentage of younger children has positive exposure

FIGURE 1 (continued)

WHO COMBINED ORAL HEALTH AND TREATMENT ASSESSMENT FORM										Sheet 2	
Note 1 No codes to be changed					2 Unused sections to be cancelled by disposal lines					Examination	
(1) Study Number: (5) Date: 					(6) (7) Registration Number: 					(11) Number (12) (for duplicates): 	
PERIODONTAL STATUS Absent = 0 Present = 1					PERIODONTAL TREATMENT REQUIREMENTS						
SOFT DEPOSITS max (42) (44) mand (45) (47)					NONE 0 Oral Hygiene Instruction 1 Prophylaxis and OHI 2 Periodontal therapy (no extraction) 3 Treatment with 1 or more extraction 4 Full extraction 5						
CALCULUS max (48) (50) mand (51) (53)					DENTOFACIAL ANOMALIES WHO Criteria condition (specify) (67) treatment (68) Other criteria (to be specified) condition (specify) (69) treatment (70) 						
INTENSE GINGIVITIS max (54) (56) mand (57) (59)											
ADVANCED PERIODONTAL INVOLVEMENT max (60) (62) mand (63) (65)											
N B Central segments include cuspids and incisors left and right segments include molars and premolars											
CONDITIONS NEEDING IMMEDIATE ATTENTION					ABSENT = 0 PRESENT = 1						
RELIEF OF EXISTING PAIN OR INFECTION (71) 					TREATMENT OF PULPALLY INVOLVED TEETH (73) 						
TREATMENT FOR LESIONS LIKELY TO CAUSE PAIN OR INFECTION IN THE IMMEDIATE FUTURE (72) 					OTHER (SPECIFY) (74) 						
					CARD NO (80) 						
DENTAL CARIES STATUS AND TREATMENT OF TEETH											
18 17 16 15 14 13 12 11 21 22 23 24 25 26 27 28 55 54 53 52 51 61 62 63 64 65											
CARIES (13) (28)											
TREATMENT (29) (44)											
48 47 46 45 44 43 42 41 31 32 33 34 35 36 37 38 85 84 83 92 81 71 72 73 74 75											
CARIES (45) (60)											
TREATMENT (61) (76)											
DENTAL CARIES											
PRIMARY SOUND A 0 DECAYED B 1 FILLED & CARIES FREE C 2 FILLED WITH PRIMARY DECAY D 3 FILLED WITH SECONDARY DECAY E 4 PRIMARY TEETH MISSING DUE CARIES < 9 yrs M — PERMANENT TEETH MISSING DUE CARIES (UNDER 30 YEARS ONLY) — 5 PERMANENT TEETH MISSING ANY REASON OTHER THAN CARIES (UNDER 30 YEARS ONLY) — 6 PERMANENT TEETH MISSING ANY REASON (30 YEARS & OLDER) — 7 UNERUPTED TOOTH — 8 EXCLUDED TOOTH X 9 PERM. NONE 0 RESTORATIONS 1 surface 1 2 surface 2 3 surface 3 >3 surface or crown 4 EXTRACTION FOR caries 5 periodontal disease 6 dentures 7 other reason 8 OTHER (specify) 9 CARD No (80) 											

(58 per cent of five year olds versus 38 per cent of 17 year olds) and the average exposure rate of 49 per cent was lower than the 70 per cent of the population which currently uses fluoridated water.

The distribution of the sample according to other demographic and socioeconomic characteristics measured (such as sex, parents' occupations and mothers' education) was also analyzed. The results (presented in detail in the full report¹²) indicate the sample was closely representative of the Manitoba target population.

CLINICAL EXPERIENCE

During the fall of 1976 arrangements were made with school authorities to schedule the visit of the survey team. The survey team consisted of a dentist (W.R.R.), one of two dental assistants and the project co-ordinator (S.M.C.). The equipment used was all portable and included a lightweight folding dental chair (Adec); a fibre optic examining light (Rolux); a portable chemiclave (Harvey); and an adjustable height examiner's chair. Plane mouth mirrors, periodontal probes and new dental explorers, American Dental No. 5 (each used for 10 examinations), were used by the examiner.

During the survey, certain items of a clinical nature which either conflicted with, or were not emphasized by, the W.H.O. protocol were identified. First, with respect to the training of personnel, the examining dentist found it necessary to make two field trips. The initial field trip demonstrated a problem in relating certain clinical conditions to the examining criteria (the most significant of these being the diagnosis of occlusal and pit/cavities with their corresponding restorations). Also, because a rather high level of recording error was encountered, dental assistants involved in the survey as recorders took part in a training program. This included an introduction to the survey protocol and objectives, a series of simulated examinations and field experience by participating in the second field trial.

W.H.O. protocol specified that duplicate examinations of about 10 per cent of the sample in the main survey should be conducted on a daily basis to maintain a constant check on within-examiner variation. During the first two weeks of the survey it was possible to re-examine approximately five per cent of the subjects. However, this procedure was abandoned, largely because of time constraints, but also because in some schools only 12 or 13 children were examined which meant that the interval between first and duplicate examinations was short enough for the examiner to remember the results of the original examination.

RESULTS

The data were collected on the W.H.O. form (Figure 1) and results key entered onto magnetic tape and analysed using SPSS¹⁵ on an IBM 370 computer. Partial results

FIGURE 2
Average number of decayed, missing and filled teeth per person, by age and residence: Manitoba, 1976

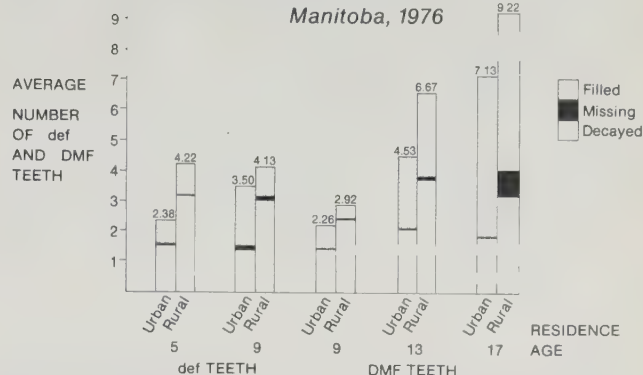


FIGURE 3
Average number of restorations and extractions required per person, by age and residence: Manitoba, 1976

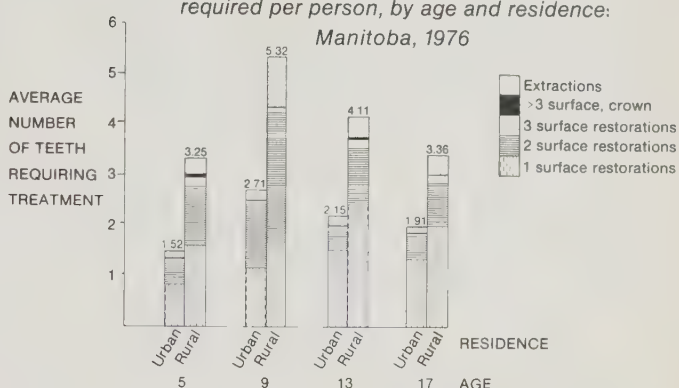


FIGURE 4
Percent of children obtaining dental care within the preceding 12 months, by occupation of father and mother: Manitoba, 1976

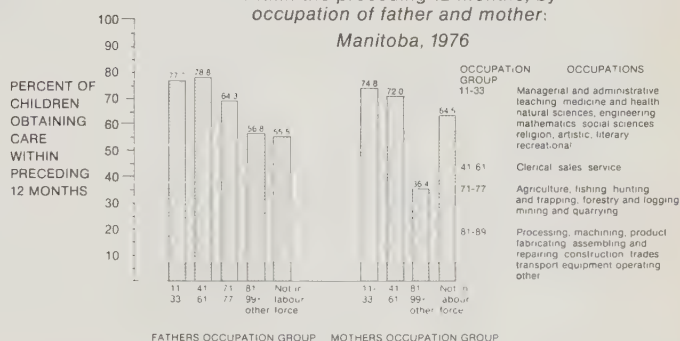
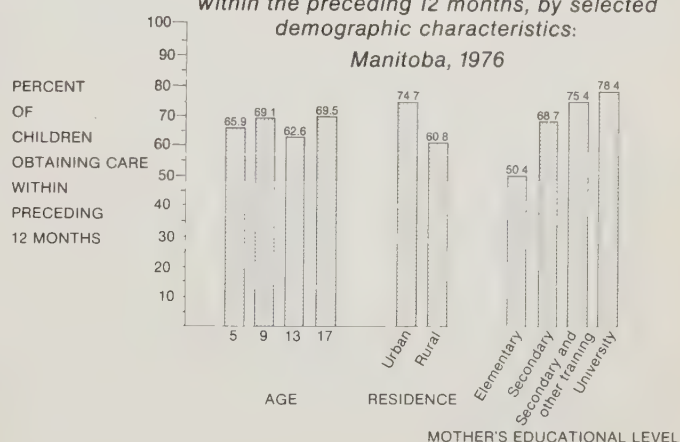


FIGURE 5
Percent of children obtaining dental care within the preceding 12 months, by selected demographic characteristics: Manitoba, 1976



are provided in **Tables 2 to 6**.

Table 2 presents a general summary of the results for each age group of children in the survey. As can be seen

the number of children examined was 300 for each age group of five, nine and 13 year olds and 292 17 year olds for a total sample of 1,192 children.

In all 66.7 per cent of the sample was reported by parents to have visited a dentist within the last 12 months. There was only a small difference in utilization levels according to age. Curiously, the nine year olds who had the highest caries level and treatment requirements were second only to seventeen year olds in the proportion having had dental care. Place of residence was an important variable, with a significantly higher proportion of urban children having seen a dentist within the previous 12 months (75 per cent versus 61 per cent of rural children).

The majority of children who obtained dental care did so for preventive reasons. Exactly 50 per cent of the total sample (61.2 urban, 41.9 rural) reported 'check up' as the reason for seeking dental care, as compared to 15 per cent requiring immediate attention to a problem. Approximately 33 per cent of the sample did not obtain dental care during the previous 12 month period with the two most common explanations being 'nothing wrong' or 'didn't get around to it.' Moreover, results of the multivariate analysis (**Table 5**) indicate children who had not had dental care within the previous year had significantly higher restoration and extraction requirements.

Survey results pertaining to periodontal status and treatment requirements are also summarized in **Table 2**. The majority of urban and rural children of all ages was found to have poor oral hygiene and mild gingivitis but it was rural children who were more likely to have calculus and be in need of prophylaxis. The rural sample also had a higher prevalence of moderate gingivitis, particularly among nine and 13 year olds (26 per cent of the latter group had moderate gingivitis and 1.7 per cent also had some severe inflammation, the highest figure reported).

Table 2 shows the percentage of children with dental caries. By age nine fully 81 per cent of urban and 94 per cent of rural children had caries affected permanent teeth. By ages 13 and 17 the urban rural difference had largely disappeared. More than 93 per cent of both groups were found to have had permanent teeth decayed.

The percentage of children requiring restorations, extractions and immediate care is also shown in **Table 2**. In general the data demonstrate the need for dental care was found more frequently in rural children than their urban cohorts. In all, 75 per cent of the sample required care for existing problems.

Table 2 also illustrates DMF teeth and def rates varied according to the history of exposure to fluoridated water. DMF rates were consistently lower among children reporting continuous exposure to fluoride (in particular at age 13 where there was a 33 per cent reduction in DMF teeth). Similarly, children aged five and nine who re-

TABLE 2						
SUMMARY OF RESULTS OF MANITOBA DENTAL SURVEY, 1976						
Age	5	9	13	17	Total	
Number examined — urban	125	125	125	117	492	
rural	175	175	175	175	700	
total	300	300	300	300	1,192	
Persons who received dental care within previous 12 months:	65.9	69.1	62.6	69.5	66.7	
					urban	rural
a) Preventive (check-up, etc.)					61.2	41.9
b) Treatment (filling, extraction)					12.3	16.6
c) Other					1.2	2.4
					74.7	60.8
Periodontal Status						
(one or more segments)						
Percentage with soft deposits:						
- urban	92.0	97.6	93.9	83.8		
- rural	94.4	98.9	90.4	89.2		
Percentage with calculus:						
- urban	11.2	24.8	44.4	60.1		
- rural	8.5	33.7	58.2	71.0		
Percentage with gingivitis:*						
- urban - mild	92.0	99.2	94.4	98.3		
moderate	2.4	4.0	14.3	16.2		
severe	-	0.8	0.8	-		
- rural - mild	93.2	99.4	96.6	91.5		
moderate	5.6	16.0	26.0	23.3		
severe	0.6	1.1	1.7	1.1		
Percentage requiring periodontal treatment:						
urban: oral hygiene instruction	84.0	72.8	47.6	29.9		
prophylaxis & OHI	12.0	26.4	50.0	67.5		
periodontal therapy	-	0.8	-	1.7		
rural: oral hygiene instruction	84.2	53.7	33.9	22.9		
prophylaxis & OHI	14.1	45.7	64.4	74.3		
periodontal therapy	-	-	1.1	1.1		
Percentage of persons with one or more caries-affected teeth:						
a) Deciduous - urban	59.2	76.8	---	---		
rural	74.2	85.7	---	---		
b) Permanent - urban	4.0	80.8	93.6	97.6		
rural	8.0	93.7	94.9	96.0		
Percentage of persons requiring one or more restorations:						
urban	51.2	71.2	72.8	60.2		
rural	69.7	93.7	87.4	79.4		
Percentage of persons requiring one or more extractions:						
urban	4.0	11.2	4.8	5.2		
rural	10.3	46.3	21.1	19.4		
Average number of def and DMF teeth per person, by exposure to fluoride:						
a) def fluoride - yes	2.78	3.14				
no	4.45	4.89				
b) DMF fluoride - yes	0.05	2.45	4.57	7.06		
no	0.18	2.85	6.78	9.04		
Percentage of persons needing immediate attention:						
urban:						
existing pain or infection	1.6	-	-	-		
lesions likely to cause pain	1.6	4.8	2.4	1.7		
pulpally involved teeth	2.4	1.6	-	-		
rural:						
existing pain or infection	4.0	5.7	0.6	2.3		
lesions likely to cause pain	2.8	13.8	5.1	6.3		
pulpally involved teeth	10.2	1.7	-	2.8		
*Mild — Löe Silness score = 1						
Moderate — Löe Silness score = 2						
Severe — Löe Silness score = 3						

ported continuous fluoride exposure experienced approximately 37 per cent lower def rates.

Table 3 gives a detailed breakdown of DMFT, def and deft-DMFT counts for each age group by place of residence. The results of statistical comparisons are also shown. As can be seen, there were significant urban-rural differences in DMF rates. Rural DMF rates were consistently higher at all ages, as were def rates for rural five and nine year olds. This urban-rural difference, along with the increase in caries prevalence with age, has been illustrated graphically in **Figure 2**.

Table 4 provides the count of the treatment requirements of the sample and a statistical comparison between the urban and rural groups. Seventy-five per cent of children in the four age groups surveyed had teeth requiring restoration. Nine and 13 year olds had the highest treatment requirements both in terms of number of children requiring restorations and mean number of teeth needing treatment. There was a significant urban-rural differential across all age groups, with urban children needing an average of 40 per cent fewer restorations. Overall, rural children aged nine had the most requirements (94 per cent of the group needed at least one restoration, with an average of 4.22 restorations required per person).

Rural nine year olds also had the highest extraction requirements, as 46 per cent required one or more extractions with a mean value of 1.10 per person for the group. The latter figure was five times higher than the comparable urban finding.

Treatment requirements according to type of restoration, (i.e. one, two, three-surface or crown) are shown both in **Table 4** and in **Figure 3**. For all age groups other than 9 year olds, one-surface restorations comprised over 50 per cent of all restoration requirements. For children aged nine, however, two-surface restorations were the major type of treatment needed, particularly in the rural sector. The number of restorations with two or more surfaces is understated since the clinical examination did not include the use of radiographs.

Some of the preceding results were confirmed through a second analysis of the data using multivariate techniques. Results presented in **Table 5** indicate place of residence and fluoride exposure were important independent variables associated with differences in dental disease and treatment requirements. Of socioeconomic variables, only mothers' educational background was found to have a significant effect on any of the dependent variables. Higher education was associated with lower average DMF teeth and restoration requirements.

TABLE 3								
AVERAGE NUMBER OF DECAYED, MISSING AND FILLED TEETH PER CHILD, BY AGE AND RESIDENCE: MANITOBA, 1976								
a) Permanent Teeth:								
Residence	Age	n	D	M	F	DMF ± Std. Error	D/DMF	
Urban (x ₁)	5	125	0.05	—	0.02	0.06 ± 0.06	0.750	
	9	125	1.42	0.02	0.83	2.26 ± 0.54	0.625	
	13	125	2.07	0.09	2.37	4.53 ± 1.01	0.458	
	17	117	1.88	0.39	4.86	7.13 ± 0.87	0.264	
Rural (x ₂)	5	175	0.13	—	—	0.13 ± 0.07	1.0	
	9	175	2.30	0.05	0.57	2.92 ± 0.41	0.787	
	13	175	3.85	0.34	2.47	6.67 ± 1.31	0.577	
	17	175	3.15	1.00	5.07	9.22 ± 1.09	0.342	
b) Deciduous Teeth:								
Residence	Age	n	d	e	f	def ⁱ ± std. error	d/def	def + DMF ± std. error
Urban (x ₁)	5	125	1.50	0.09	0.80	2.38 ± 0.72	0.628	2.45 ± 0.73
	9	125	1.32	0.15	2.02	3.50 ± 0.41	0.378	5.76 ± 0.88
Rural (x ₂)	5	175	3.18	0.09	0.95	4.22 ± 1.19	0.754	4.35 ± 1.25
	9	175	3.02	0.22	0.89	4.13 ± 0.98	0.730	7.05 ± 1.25
ⁱ Figures may not add due to rounding								
t-tests on the differences between urban and rural means:								
Variable	Age	x ₂ -x ₁	% difference $\frac{(x_2-x_1)}{x_1}$			t	p	
Mean DMF	9	0.656	rural higher, 29.0%			2.399	<0.05	
	13	2.141	rural higher, 47.3%			3.046	<0.02	
	17	2.093	rural higher, 29.4%			3.541	<0.01	
Mean def	5	1.839	rural higher, 77.1%			3.052	<0.02	
	9	0.635	rural higher, 18.2%			1.356	N.S.	
Mean def+DMF	5	1.901	rural higher, 77.6%			3.029	<0.02	
	9	1.291	rural higher, 22.4%			1.972	N.S.	

Socio-economic characteristics of parents considered in the survey all appeared to have a significant effect on dental service utilization by their children. Children whose fathers or mothers were in the 'professional' occupational categories or whose mothers had university education or secondary plus other training were more likely to have reported dental visits in the previous year. The findings on utilization of dental services are illustrated graphically in **Figures 4 and 5**.

DISCUSSION

The present survey is unique in that results have been computed separately for urban and rural components of the sample.

Urban-rural differences in disease levels were a significant finding. Mean DMF teeth scores of rural children aged nine, 13 and 17 and deft scores of rural five

year olds were all found to be significantly higher than those of their urban cohorts. Part of this difference is explained by the fact that both Winnipeg and Brandon have fluoridated water and many rural children do not have the same advantage. In the present survey, history of exposure to fluoridated water had a significant effect on both def and DMF scores. In the sample 82 per cent of urban children had optimum fluoride exposure as opposed to 25 per cent of rural children. Even so, there remains a significant urban-rural differential in DMF scores independent of fluoride exposure (**Table 5**).

The difference in caries prevalence between the two fluoride exposure groups (**Table 2**) was not as great as expected. However, this survey was not designed to specifically evaluate the effects of fluoride and the analysis provides only a crude breakdown into exposure groups. Moreover, dental disease levels were measured

TABLE 4
AVERAGE NUMBER OF TEETH REQUIRING TREATMENT PER CHILD,
BY AGE AND RESIDENCE:
MANITOBA, 1976

Residence	Age	Restorations				Total ⁱ ± Std. Error	Extractions	Total ⁱ treatment + Std. Error
		1 Surface	2 Surface	>3 Surface	3 surface or crown			
Urban (x ₁)	5	0.70	0.62	0.05	0.06	1.42 ± 0.41	0.10	1.52 + 0.48
	9	1.07	1.31	0.10	0.02	2.50 ± 1.11	0.21	2.71 + 1.19
	13	1.58	0.44	0.03	0.02	2.07 ± 0.61	0.08	2.15 + 0.66
	17	1.33	0.42	0.08	0.02	1.85 ± 0.92	0.06	1.91 + 0.93
Rural (x ₂)	5	1.54	1.19	0.18	0.15	3.06 ± 1.05	0.19	3.25 + 1.24
	9	1.54	2.38	0.26	0.03	4.22 ± 0.93	1.10	5.32 + 1.35
	13	2.41	1.11	0.19	0.03	3.74 ± 0.73	0.37	4.11 + 1.01
	17	1.91	0.98	0.15	0.02	3.06 ± 0.71	0.29	3.36 + 0.65

ⁱFigures may not add due to rounding.

t- tests on the differences between urban and rural means:

Variable	Age	x ₂ -x ₁	% difference (x ₂ - x ₁) x ₁	t	p
Restorations required	5	1.639	rural higher, 115.5%	3.271	<0.01
	9	1.713	rural higher, 68.4%	2.913	<0.02
	13	1.635	rural higher, 78.9%	4.164	<0.01
	17	1.209	rural higher, 65.4%	2.575	<0.05
Total treatment required	5	1.731	rural higher, 113.8%	2.924	<0.02
	9	2.608	rural higher, 96.3%	3.453	<0.01
	13	1.957	rural higher, 91.0%	3.773	<0.01
	17	1.444	rural higher, 75.6%	3.187	<0.01

by the number of def and DMF teeth per child and not in decayed surfaces. In previous studies, fluoride has been shown to have its main caries reduction effect on smooth surface lesions.

In addition to urban-rural and fluoride-non-fluoride differences in disease prevalence, there were also marked differences in urban-rural care levels. As revealed by the ratio of decayed to the decayed, missing and filled teeth (**Table 3**), untreated disease was markedly higher for rural children. For example, in five year old rural children 75.4 per cent of the deft were decayed as compared to 62.8 per cent for urban children. For 17 year olds from rural areas 34.2 per cent of the DMFT were decayed, whereas in urban children 26.4 per cent of the DMFT were decayed. For 17 year olds this finding translates into a backlog of 3.36 required treatment services for the rural sample and 1.91 required services for urban children.

Visiting a dentist within the previous 12 months was found to be significantly correlated with the amount of care required (**Table 5**). Thus the rural children's lack of utilization accounts for part of their large backlog of unmet care. Also of note is the difference in type of care received. While urban and rural children appear to receive approximately the same numbers of fillings for permanent teeth, considerably fewer deciduous teeth are restored in rural children (**Table 3**). As an example of the latter, at nine years of age, urban children have 2.02 (57.7 per cent of 3.5 deft filled), whereas rural children have only 0.89 (21.6 per cent of 4.13 deft filled).

Permanent tooth mortality is also much higher in rural children **Table 3**). By the time urban children reach 17 they have lost an average of 0.39 teeth. The rural average is two and one half times that, with rural 17 year olds having lost an average of 1.00 teeth. If these findings are combined with the number of extractions required (**Table 4**) urban 17 year olds would have lost 0.45 teeth and rural 17 year olds would have lost an average of 1.29 permanent teeth. The latter is 2.85 times greater than the urban figure.

While relatively high dental service utilization was reported for both ur-

ban and rural children, it is apparent rural children are not receiving comparable levels of treatment coverage. Part of this might be explained by the "Busyness" of rural dentists. With a much less favorable supply of practising dentists in rural areas, these practitioners are much more likely not to have time to provide ideal care to all patients. The severe shortage of rural dentists at the time of the survey was illustrated by the Manitoba Dental Association report of a total of 222 private practitioners and specialists in metropolitan Winnipeg for 596,847¹⁷ people (1:2688) as opposed to 77 in the rest of Manitoba where 481,882 people reside (1:6258).

CONCLUSION

The W.H.O. Survey Methodology was used in Manitoba to assess the dental health status of the child population. It has provided a standardized format which can

TABLE 5					
RESULTS OF MULTIVARIATE ANALYSIS					
Dependent Variables					
Independent Variables (Scores)		DMF Teeth	def Teeth	Restorations required	Extractions required
Sex (1,2)	P ⁱ t ⁱⁱ	.0473 2.32	- .0158 -0.63	- .0499 -1.78	.0085 0.29
Age (5, 9, 13, 17)	P t	.6647 32.03**	- .5368 -21.07**	- .0206 -0.72	- .0515 -1.75
Fluoridation (0,1)	P t	- .0847 -3.38**	- .0972 -3.15**	- .0926 -2.68**	- .0789 -2.22**
Residence (urban, rural)	P t	.0813 3.16**	.0543 1.72	.1620 4.58**	.1212 3.32**
Service Utilization (0,1)	P t	.1525 7.19**	.0813 3.12**	-.1024 -3.51**	-.0946 -3.15**
Occupation (1-10)	P t	.0449 1.80	-.0059 -0.19	-.0225 -0.66	-.0288 -0.82
Education (0-7)	P t	-.0510 -2.05*	-.0117 -0.38	-.1344 -3.93**	-.0578 -1.64
n = 1151					
ⁱ P = Standardized partial regression coefficient.					
ⁱⁱ t = Value for the .05 probability level is 1.96 (significant values are indicated by *); t value for the .01 level is 2.58 (indicated by **).					

be repeated for Manitoba and compared with other jurisdictions. The ability to relate socioeconomic and other variables to clinical findings is a definite advantage.

The major findings of the survey of the 1192 children were rural children had significantly higher caries rates at all ages examined (five, nine, 13, 17) than did their urban cohorts; deft and DMFT levels were significantly correlated with previous exposure to fluoridated water; utilization of existing dental care systems within the previous 12 months was reported by 61 per cent of the rural sample and by 75 per cent of the urban sample; utilization was significantly higher for children with a parent in a 'white collar' occupation or a mother with higher education; care levels and treatment required estimates were much worse for the rural sample; care rendered to rural children is different than that rendered to their urban cohorts. By age nine rural children received 1.13 fewer restorations in deciduous teeth and by age 17 they received 2.5 times the number of extractions of permanent teeth than their urban counterparts.

The authors wish to express appreciation to officials of the Department of Education and participating schools, the staff of Computer Service Branch, Department of Health and Community Services, Province of Manitoba; Dr David Fish and staff, Department of Social and Preventive Medicine, University of Manitoba; parents; and children who examined.

The survey was funded entirely by the Department of Health and Community Services, Province of Manitoba.

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Ontario dental health survey - 1978

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L'Ontario vient d'achever une étude similaire à l'étude collective menée à l'échelle internationale afin de déterminer les effectifs dont elle dispose pour assurer une bonne hygiène buccale à sa population. Les soins dentaires sont donnés par des praticiens privés qui offrent leurs services contre rémunération. En outre, il existe un service de santé dentaire éducatif, consultatif et préventif à l'intention des enfants. Les réserves d'eau sont fluorées aux deux tiers et la population est munie d'une assurance dentaire dans une proportion de 29 pour cent.

Les premières dents et les dents permanentes des enfants ontariens qui sont âgés de huit à neuf ans et de 13 à 14 ans, présentent moins de caries que celles des enfants de toutes les autres régions internationales, excepté Baltimore aux Etats-Unis. On croit que cette baisse de la carie est due à la fluoration de l'eau. Les étudiants nés et élevés dans les régions où l'eau est fluorée ont 3.7 dents DMF, alors que ceux des régions où l'eau n'est pas fluorée en ont 4.9.

En Ontario, l'étudiant moyen qui est âgé de 13 à 14 ans a 6.5 dents affectées par la gingivite, soit le nombre le plus bas pour les six régions étudiées. Les programmes d'hygiène dentaire éducatifs et préventifs préparés par la province à l'intention du public, l'usage fréquent et répandu de dentifrices fluorés, les visites annuelles au dentiste qui se font à une moyenne de 71 pour cent et le fait qu'on reconnaît généralement la valeur d'une bonne hygiène dentaire, tels sont les facteurs qui ont contribué à abaisser le taux des affections gingivales.

Les Ontariens âgés de 35 à 44 ans ont en moyenne 15.6 dents DMF, soit un taux remarquablement comparable à celui des adultes de Baltimore, aux Etats-Unis, qui, eux, en ont 15.8. Les immigrants ontariens ont environ cinq dents DMF de moins que les adultes autochtones. Ils manquent 3.5 dents de plus aux adultes qui n'habitent pas les grands centres urbains qu'à ceux qui y vivent. 8.7 pour cent des adultes âgés de 35 à 44 ans ont perdu complètement leurs dents et 11.5 pour cent ont perdu celles d'une mâchoire.

ABSTRACT

A replication of the international collaborative study of oral health manpower systems has been completed in Ontario. Dental services were delivered by private practitioners on a fee-for-service basis, supplemented by a dental public health educational, preventive and referral service for children. Two-thirds of the water supplies were fluoridated and 29 per cent of the population had dental insurance.

The primary and permanent tooth caries for the eight and nine and 13 and 14 year old students was lower than all other international study sites, except Baltimore, United States. It is believed water fluoridation was mainly responsible for the relatively low caries scores. Students born and raised in areas with fluoridated water supplies had 3.7 DMF teeth. Students in non-fluoridated areas had 4.9 DMF teeth.

The average 13 and 14 year old Ontario student had 6.5 teeth with gingivitis, the lowest number of all six study locations. Provincial educational and preventive dental public health programs, widespread and frequent use of fluoride toothpastes, the 71 per cent annual visit rate to the dentist and a general appreciation of the value of good dental health, may be responsible for the gingival conditions.

The Ontario dentate 35 to 44 year old adults, with an average of 15.6 DMF teeth, were remarkably similar to the Baltimore, U.S.A., adults with 15.8 DMF teeth. Immigrants to Ontario had about five less DMF teeth than Canadian-born adults. Non-metropolitan adults had 3.5 more missing teeth than their metropolitan counterparts. Of 35 to 44 year old adults, 8.7 per cent were completely edentulous and 11.5 per cent were edentulous in one jaw. While this state of adult dental health was not alarming compared to the populations of other study areas, it can be improved as the fluoride influenced population reaches maturity and dental services become more equally distributed in the province.

“... the survey attempted to define the inter-relationships of consumers, providers and the dental health system ...”

An extension of the International Collaborative Study (I.C.S.) of “Dental Manpower Systems in Relation to Oral Health” has been completed in Ontario, Canada, using a format similar to the one used in the original five study countries — Australia, the Federal Republic of Germany, Japan, New Zealand and Norway and, subsequently in Baltimore, United States.^{1,2,3,4} The countries in the previous study were chosen because of differences in dental services. Dentists in Australia worked mainly on a fee-for-service basis, there was little dental insurance and 45 per cent of the population used fluoridated water.⁵ The Federal Republic of Germany provided services through private dental practitioners on a fee-for-service basis. Ninety-three per cent of the population had compulsory dental health insurance. There was a school examination and referral service. Fluoridation of public water supplies had not been introduced.⁶ Japan also delivered most services through private dental offices. A large number of the population had some form of dental health insurance. In 1972, 7,350 dental hygienists worked in the system. There was an annual school dental examination. Less than one per cent of the population received fluoridated water.⁷ Norway had a good dentist to population ratio of 1 : 1,120 and very few hygienists. Fifty-five per cent of dentists worked in private practice on a fee-for-service basis and the remainder worked for the School Dental Service or Public Dental Service, which provide government sponsored dental care to children seven to 14 and six to 20 years of age respectively. Water fluoridation does not exist in Norway. Widespread topical and systemic fluorides (tablets) were used.⁸ New Zealand had a free dental care system for children 2.5 to 13 years of age, staffed by school dental nurses and for children 14 to 16 years of age, provided by dentists in private offices. Fifty per cent of the population, but only 20 per cent of the population at Canterbury, the study site, consumed fluoridated water.⁹ The United States delivered services mainly on a fee-for-service basis by private dental practitioners and dental hygienists. Fifteen

per cent of the population had some prepaid dental coverage. Half the population consumed fluoridated water.⁴

Important characteristics of Ontario dental services, some of which can be compared to those of the above sites, are described briefly.

Ontario, the second largest Canadian province, had 8,264,465 people in 1976, or 36 per cent of the nation's population. The per capita income in 1975 was \$6,431. The majority of oral health services were provided on a direct fee-for-service basis. Government-financed dental treatment was available to armed forces personnel and welfare recipients. Local municipalities and regional authorities administered some dental education, prevention and referral services for school children. Some

Table 1

Ontario, Canada Students 13 — 14 Years of Age Decayed, Missing and Filled Teeth By Residence in Fluoride or Non-Fluoride Area		
	Fluoride	Non-Fluoride
Decayed	0.93	1.38
Missing	0.09	0.22
Filled	2.70	3.34
D.M.F.	3.72	4.94

Table 2

Ontario Canada Students 13 — 14 Years of Age Decayed, Missing and Filled Teeth By Geographic Location and Water Fluoride Status					
	Decayed	Missing	Filled	DMF	Fluoride Status
Toronto City	0.98	0.05	2.05	3.09	+
North York	0.64	0.03	2.83	3.49	+
East York and York	0.96	0.21	2.44	3.60	+
York Region	1.00	0.06	4.00	5.06	-
Oshawa	0.92	0.17	2.74	3.83	+
Durham Region	0.90	0.13	4.09	5.12	-
Cornwall	1.58	0.12	2.15	3.86	+
Stormont County	1.84	0.22	3.27	5.32	-
Thunder Bay	2.08	0.35	4.02	6.45	-
Thunder Bay District	0.88	0.29	2.04	3.21	+
Total Sample	1.17	0.15	2.99	4.32	

cities also offered dental treatment for school children. Twenty-nine per cent of the population had dental health insurance.¹⁰ Fluoridated water supplies reached 62.3 per cent of the population.¹¹ The two dental schools graduated 177 dentists annually. In 1977, Ontario had 3,949 dentists for a dentist population ratio of 1 : 2093.¹² Ten per cent of dentists were specialists. The dentists routinely employed one or more dental chairside assistants. There were 1,041 traditional, North American dental hygienists whose work was prevention oriented. The annual number of dental hygiene graduates had increased from 50 in 1973 to 224 in 1978.¹³ Some 342 denture therapists made full dentures without supervision by a dentist. Most features of the Ontario, Canada dental care system were similar to those of Japan and the United States. Ontario used more dental auxiliaries than Australia, Norway or Germany. It did not have government-financed, comprehensive, universal dental care for children like Norway and New Zealand or a universal, dental, National Health Insurance system like the Federal Republic of Germany. Seventy-one per cent of students and 54 per cent of adults had visited the dentist in the previous year. The cost for dental services was \$28.33 per capita, or 0.36 per cent of the Ontario Gross Provincial Product.¹⁴

The purpose of the study was to obtain information about the dental health status of the population of Ontario as related to the structure of the dental care delivery system. Also, the survey attempted to define and analyze the inter-relationships of consumers, providers and the dental system.

The oral health survey included measures of periodontal disease, dental caries, dento-facial anomalies, prosthetic status and oral pathology in groups of children and adults. Treatment requirements were estimated and recorded for each condition.² Questionnaires for older students and adults obtained information on attitudes to

general and oral health services, past behaviour with respect to oral health and perceptions of the accessibility and acceptability of dental services. Providers of services, dentists and hygienists, were interviewed to determine attitudes toward their work and patients and to assess the economics and productivity of their practices. Only oral health data will be described in this paper.

The study sample consisted of 1,124, eight and nine year old children, 936 13 and 14 year old children, 441 25 to 34 year old adults and 702 35 to 44 year old adults.

The sample was drawn from four cities in Ontario — Cornwall, Oshawa, Toronto and Thunder Bay and surrounding communities. Water supplies of the first three cities had been fluoridated for at least 15 years.

Children were chosen by a random selection of classes in the appropriate grade level. Adults were chosen by computer selection from population registers. Eighty-nine per cent of children and fifty-nine per cent of adults were born in Canada.

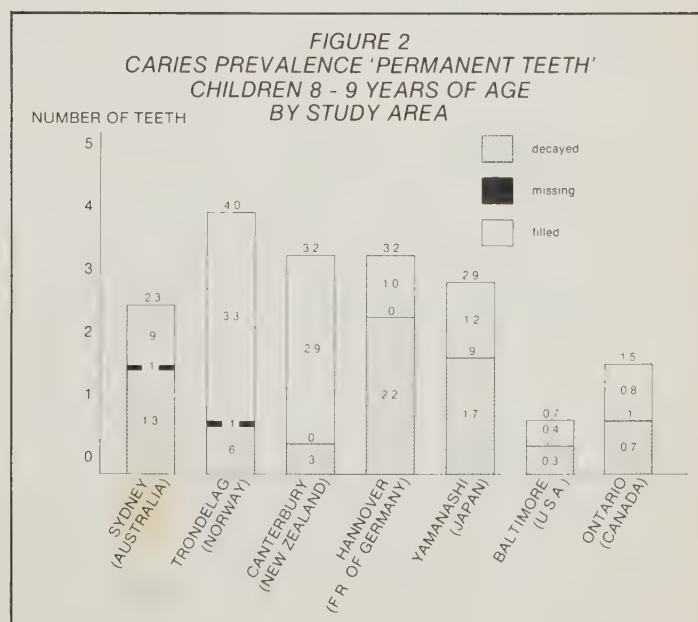
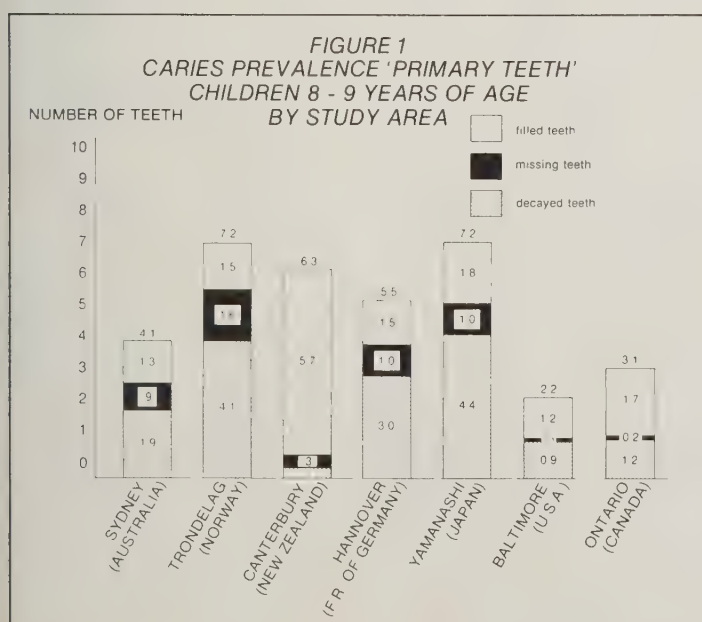
Dental examiners, recorders and interviewers were trained to standards set in the I.C.S. study by Dr. David Barmes, Chief of the World Health Organization Oral Health Unit and by Mary Foster, the study sociologist. Dr. A.M. Hunt acted as the study epidemiologist.

DESCRIPTION OF ORAL HEALTH VARIABLES

The state of oral health and the treatment needs are described briefly for each age group and, where possible, compared to data from the other I.C.S. countries.

CHILDREN EIGHT TO NINE YEARS OF AGE

The children had a mixed dentition with a mean number of 9.8 deciduous teeth and 13.1 permanent teeth per child and, of these, 7.0 deciduous and 11.6 permanent teeth were sound.



1. Dental Caries

Caries prevalence for deciduous teeth of the eight and nine year old children is shown in **Figure 1**. The average number of primary decayed (d) missing due to caries (m) and filled (f) teeth (dmft) was 3.1 of which 1.2 were decayed, 0.2 were missing and 1.7 were filled. The average number of permanent decayed (D), missing (M) and filled (F) teeth (DMFT) was 1.5 (**Figure 2**). The components were 0.7 decayed, 0 missing, and 0.8 filled teeth. These were the second lowest deciduous and permanent dmft, DMF tooth scores in the International group surpassed only by Baltimore, U.S.A.

Fluoride was found to reduce the amount of dental caries. Children born in areas with fluoridated water supplies had 0.7 d, 0.16 m, 1.70 f = 2.56 dmft primary teeth. Children born in non-fluoride areas had 1.20 d, 0.38 m, 1.92 f = 3.49 dmft teeth. The permanent teeth

DMF index in fluoride areas was 0.53 D, 0.01 M and 0.74 F = 1.25 DMF teeth. In non-fluoride areas it was 0.79 D, 0.07 M, 1.06 F = 1.90 DMF teeth. It was not possible to determine the child's time of residence in any one area.

2. Periodontal Health

The mean number of teeth with gingivitis was 3.75,
The debris index was 0.94,
The calculus index was 0.03,
The oral hygiene index was 0.96,
The periodontal index was 0.31.

In comparison with the I.C.S. countries and the U.S.A., Ontario children had the lowest scores in all of the periodontal related indices except the oral hygiene index in which Baltimore, U.S.A., had a lower score of 0.85.⁴

3. Treatment Requirements

The average eight to nine year old child had 1.4 teeth,

Table 3

Number of Teeth with Gingivitis, Periodontal Index and Oral Hygiene Index by Location and Sex for 13-14 Year Old Students in Study Areas of Seven Nations

	Study Areas						
	Australia	F.R. Germany	Japan	N.Z.	Norway	U.S.A.	Ontario
Number of Teeth with Gingivitis							
Total	17.07	18.23	14.05	13.97	13.83	12.55	6.5
Metro Males	17.11	18.62	10.54	14.13	15.36	13.54	7.4
Non-Metro Males	18.22	19.28	16.82	15.24	15.18	13.50	7.4
Metro Females	16.19	16.52	10.08	12.63	12.79	11.79	5.7
Non-Metro Females	16.71	18.36	17.32	13.94	11.83	11.22	5.6
Periodontal Index (PI)							
Total	0.79	0.80	0.55	0.57	0.53	0.54	0.26
Metro Males	0.79	0.81	0.30	0.58	0.64	0.58	0.30
Non-Metro Males	0.89	0.86	0.76	0.69	0.63	0.58	0.30
Metro Females	0.73	0.72	0.28	0.44	0.44	0.51	0.23
Non-Metro Females	0.75	0.83	0.76	0.58	0.39	0.47	0.22
Oral Hygiene Index (OHI-S)							
Total	1.18	1.26	1.56	0.79	1.04	0.78	0.81
Metro Males	1.27	1.31	1.60	0.94	1.12	0.90	0.96
Non-Metro Males	1.27	1.30	1.50	0.76	1.18	0.82	0.82
Metro Females	1.10	1.18	1.51	0.78	0.89	0.76	0.73
Non-Metro Females	1.11	1.24	1.62	0.67	0.96	0.61	0.69

Source: Bonito, A. United States Study of Dental Manpower Systems in Relation to Oral Health Status, Part II. Baltimore College of Dental Surgery 1977.

primary or permanent, requiring restoration (less than the 2.2 restorations needed per child eight to 10 years of age in the Nutrition Canada Survey (1977)).

Other indicators of the relatively good state of dental health of Ontario eight to nine year old children included: 56.7 per cent had no decayed primary teeth; 66.4 per cent had no decayed permanent teeth; 48.8 per cent had neither decayed primary teeth nor decayed permanent teeth; 26.8 per cent had no dmf teeth; and, 39.4 per cent had no DMF teeth.

STUDENTS 13-14 YEARS OF AGE

The students had a mean number of 26.9 teeth present of which 22.0 were sound.

1. Dental Caries

The mean DMF score for 13 and 14 year old students was 4.4, composed of 1.2 decayed, 0.2 missing and 3.00 filled teeth (Figure 3). Compared to I.C.S. sites, Ontario had the second lowest caries prevalence after Baltimore in the United States.

Table 4			
Distribution by Number and Percent of Dentofacial Anomalies present for 13-14 Year Olds, Ontario Sample, 1978 and Baltimore, U.S., Sample, 1977			
		Per cent Present	
Condition	N	Ontario Sample	U.S. Sample
Dentition			
Congenital absence	38	4.1	1.1
Supernumerary	10	1.0	0.0
Malformed teeth	14	1.5	1.7
Impacted teeth	19	2.0	0.6
Transposed teeth	2	0.2	0.2
Missing teeth	178	19.0	8.5
Retained teeth	66	7.1	3.8
Space			
Crowding	263	28.1	22.9
Spacing	165	17.6	20.0
Anterior irregularities	283	30.2	34.4
Diastema	132	14.1	20.8
Occlusion			
Anteroposterior molar relation	334	35.7	23.6
Posterior openbite	49	5.2	12.5
Posterior crossbite	182	19.4	9.1
Overjet	141	15.1	7.9
Overbite	153	16.3	19.3
Midline deviation	201	21.5	26.1
Soft tissue impingement	31	3.3	9.6

Much of the low caries prevalence can be related to fluoridated water supplies. The 424 13 and 14 year old students who were born and resided at least five years in a fluoride area had an average of 3.7 DMF teeth. The 298 students born and raised in a non-fluoride area had 4.9 DMF teeth (Table 1). In Table 2, which is a display of DMF scores by geographical study region within Ontario, it is apparent children in the regions supplied by fluoridated water had fewer DMF teeth (range 3.1 to 3.9) than those in non-fluoridated communities (range 5.1 to 6.5).

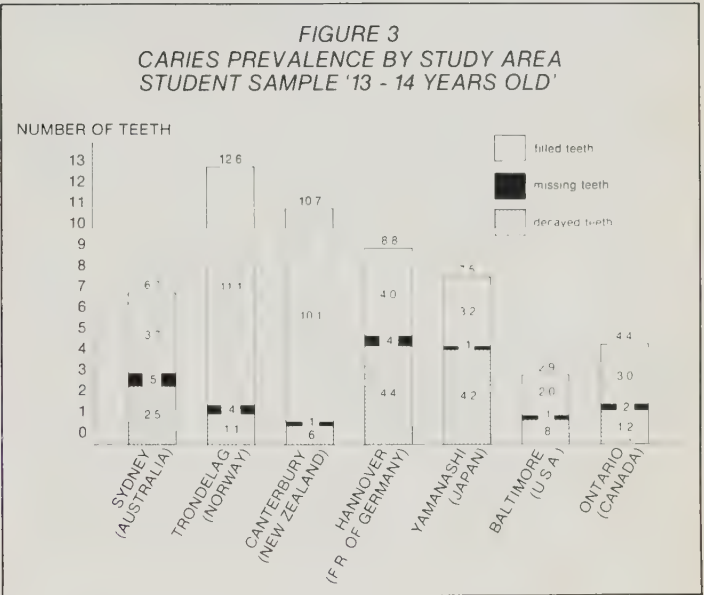


Table 5				
Ontario, Canada Total Population — Adults Decayed Missing and Filled Teeth By Age and Length of Time in Canada				
	Decayed	Missing	Filled	DMF
25 — 34 Year Olds				
Less than 5 years	2.26	2.97	5.82	11.05
5 — 9 years	1.80	2.98	5.25	10.04
10 — 19 years	1.18	3.80	5.43	10.41
20 or more years	1.58	4.34	9.40	15.32
Total sample	1.62	4.00	8.17	13.79
35 — 44 Year Olds				
Less than 5 years	2.04	4.68	6.14	12.86
5 — 9 years	1.96	6.89	4.28	13.13
10 — 19 years	1.58	5.40	5.56	12.54
20 or more years	1.36	8.78	7.97	18.10
Total sample	1.47	7.83	7.19	16.48

The DMF tooth score of male students was 4.0 and of female students, 4.6. The metropolitan students had 4.0 DMF teeth and the non-metropolitan students had 5.0 DMF teeth.

2. Periodontal Health

The number of teeth with gingivitis (6.5) and the periodontal index (0.26) were very low compared with the other I.C.S. countries (Table 3).⁴ The oral hygiene index was also low and similar to that of Baltimore, U.S.A., and New Zealand. The debris index for males and females was 0.7.

3. Anomalies, Space and Occlusion

Several different assessments were made of dental anomalies, space and occlusion as a basis for an estimate of treatment needs. The percentages of each condition for Ontario and Baltimore⁴ samples are shown in Table 4.

- a) Dentofacial Anomalies: The most numerous anomalies were missing teeth (19 per cent of the sample) and retained teeth (7.1 per cent of the sample).
- b) Spaced and Crowded Teeth: Thirty point two per cent of students had irregular anterior teeth and 28.1 per cent had crowded teeth. Measurable spaces in the arch were evident in 17.6 per cent and 14.1 per cent had a diastema. The latter condition caused some concern about appearance.
- c) Occlusion: Among the measures of occlusion, some departure from a normal anteroposterior molar relationship (35.7 per cent) and deviation of the mid-line (21.5 per cent) were the most common, followed by posterior crossbite (19.4 per cent), overbite (16.3 per cent) and overjet (15.1 per cent).

4. Treatment Requirements

Fifty-two per cent of students needed oral hygiene instruction, 55 per cent required plaque removal and/or minor scaling, and only three per cent needed major scaling.

For caries related conditions, 49.7 per cent of students did not require restorations. The average student had 1.23 teeth in need of restoration and 0.07 teeth requiring extraction. The Nutrition Canada study stated 0.9 restorations were needed per Ontario person 12-14 years of age.

In terms of orthodontics, 25.4 per cent of students needed some corrective treatment and 8.0 per cent needed preventive care. Two per cent had had treatment

completed. Treatment was in progress for 8.9 per cent. However, 26.4 per cent were still in need of care.

THE ADULT SAMPLES, 25 TO 34 AND 35 TO 44 YEARS OF AGE

A 35 to 44 age group was included in the Ontario sample, similar to the I.C.S. grouping. An additional 25 to 34 year age group was considered separately in Ontario to enable study of dental disease between the ages of adolescence and early middle age.

The 25 to 34 year old adults had a mean number of 25.47 teeth present, of which 13.7 were sound. The 35 to 44 year old adults had 20.97 teeth present of which 10.96 were sound.

Table 6		
Ontario, Canada		
Number of Teeth Missing For Any Reason By Age and Metropolitan or Non-Metropolitan Area		
	25 — 34 Year Olds	35 — 44 Year Olds
Metro	3.33	6.98
Non-Metro	6.80	10.62
Total sample	4.46	8.36

Table 7	
25 to 34 Year Old Adults	
Selected Periodontal Health Data	
Number of teeth with gingivitis	10.8
Debris index	0.67
Calculus index	0.63
Oral hygiene index	1.30
Periodontal index	0.67

Table 8							
Non-Edentulous 35 to 44 Year Old Adults							
Means of Selected Oral Morbidity Measures							
	Australia	F.R. Germany	Japan	N.Z.	Norway	U.S.A.	Ontario
Debris Index	0.92	1.06	1.18	0.66	0.68	0.51	0.78
Calculus Index (CI)	0.22	0.67	1.01	0.18	0.51	0.64	0.85
Oral Hygiene Index (OHI-S)	1.13	1.71	2.16	0.82	1.20	1.16	1.44
Periodontal Index (PI)	1.48	2.02	2.15	1.08	1.30	2.10	0.96

1. Dental Caries

The 25 to 34 year old adults had 0.9 decayed (D), 4.2 missing (M) and 8.9 filled (F) teeth, a total of 14.0 DMF teeth. Adults in the Nutrition Canada Study,¹⁴ with an average age of 30 years, had 15.6 DMF teeth.

The 35 to 44 year old adults had 1.7 decayed, 8.0 missing and 6.9 filled teeth and 16.6 DMF teeth. By comparison, the Nutrition Canada Study adults, with an average age of 40, had 17.8 DMF teeth. This group can be compared with the other I.C.S. country adults for both the total sample and the dentate sample (Figure 4). The Ontario dentate 35 to 44 year old adults were most like the Baltimore adults. Japanese and German adults had lower DMF indices and Australian, Norwegian and New Zealand adults had much higher DMF indices.

Ontario has had a large influx of immigrants in the last 30 years. It is interesting to note adults who have lived in Ontario more than 20 years (mostly Canadian born), had almost one-third more DMF teeth than immigrants who arrived after that time (Table 5). Adults in the metropolitan sample had significantly fewer missing teeth than those in the non-metropolitan area (Table 6). The difference was approximately 3.5 missing teeth for both adult age groups.

2. Periodontal Health

Some data for 25 to 34 year old dentate adults are shown in Table 7.

The 35 to 44 year old adults' periodontal health indicators can be compared to the I.C.S. country adult data. Ontario adults had an average number of 10.28 teeth with gingivitis, which was lower than that of any group of adults in the I.C.S. Study. The debris index fell in the lower range of the I.C.S. countries (range 0.66 — 1.18) (Table 8). The calculus index was in the mid-

dle range (range 0.22 — 1.01). The oral hygiene index was in the middle range (range 0.82 — 2.16). The periodontal index was at the lowest end of the range (range 1.08 — 2.15).

3. Edentulousness

At 25 to 34 years of age, 2.9 per cent of the Ontario adults were edentulous in both jaws and 5.4 per cent were edentulous in one jaw (Table 9). At 35 to 44 years, 8.7 per cent were edentulous in both jaws and an additional 11.5 per cent were edentulous in one jaw.

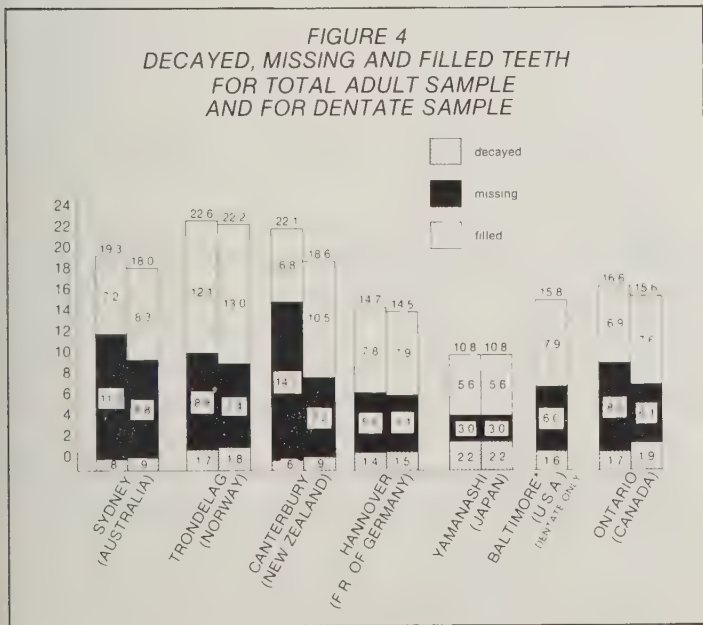
The following percentages of the I.C.S. sites' 35 to 44 year old adults were completely edentulous: Japan, 0.0; Federal Republic of Germany, 1.6; Norway, 6.4;

Table 9

Ontario, Canada — Adults				
Age	Edentulous Both Jaws		Edentulous One Jaw	
	Number	Percent	Number	Percent
25 — 34	13	2.9	24	5.4
35 — 44	61	8.7	81	11.5

Table 10

35 to 44 Year Old Adults, Ontario						
	Males		Females		Males & Females	
	N	%	N	%	N	%
Total Sample (N=639)						
Full Denture Requirements (One or Both Jaws)						
Have none, need none	255	86.4	300	87.0	555	86.7
Have none, need some	3	1.0	0	0.0	3	0.5
Have some, need none	29	9.8	37	10.7	66	10.3
Have some, need some	8	2.7	8	2.3	16	2.5
Total	295	99.9	345	100.0	640	100.0
Partial Denture Requirements						
Have none, need none	171		200		371	58.1
Have none, need some	78		96		174	27.2
Have some, need none	27		32		59	9.2
Have some, need some	18		17		35	5.5
Total	294		345		639	100.0
Bridge Requirements						
Have none, need none	154	52.4	189	54.8	343	53.7
Have none, need some	110	37.4	117	33.9	227	35.5
Have some, need none	19	6.5	25	7.2	44	6.9
Have some, need some	11	3.7	14	4.1	25	3.9
Total	294	100.0	345	100.0	639	100.0



Ontario, 8.7; U.S.A., 10.6; Australia, 13.2; and New Zealand 35.7.

4. Prosthetic Requirements and Treatment

Data for the 35 to 44 year old age group have been summarized for full and partial denture and bridge possession and need under the categories: have no dentures or bridges, need none; have none, need some; have some, need none; have some, need some (Table 10). The data for the 35 to 44 year old group can be compared to similar data presented for the original study countries by Barmes.¹⁵ Ontario adults had a high unmet need for partial dentures at 27.2 per cent of the sample. The unmet need for bridges at 35.5 per cent of the sample was higher than that of any of the other countries.

CONCLUSIONS

The study has provided information about the oral health status of four age groups of Ontario citizens, opinions of consumers and providers of dental care, and features of the delivery system which affect dental care. It was soundly planned, using the World Health Organization International Collaborative Study of Dental Manpower Systems as a model. Teams of dentists and interviewers were trained to high standards so that the resultant data are as reliable as possible. The organization and conduct of the survey showed a large scale dental health survey is possible in a complex country like Canada and that it is possible to obtain a reasonable 70 per cent response from adults.

Some data from the oral health examination are worthy of emphasis. The dental caries prevalence among eight and nine year old and 13 and 14 year old children was the second lowest among the International Collaborative Study countries. It is likely that water fluoridation had a great influence on this result. For example, the 50 per cent of students born and raised in communities with fluoridated water supplies had an average of 3.7 DMF teeth, and the 35 per cent of students born and raised in non-fluoride areas had an average of 4.9 DMF teeth. The students also had a very low number of teeth with gingivitis (6.5). This may be attributed to the extensive dental health education programs in the province, widespread and frequent use of fluoride toothpastes, toothbrushing and the fact that 71 per cent of students visit the dentist each year.

A large proportion of the students were deemed to be in need of orthodontic care.

Adults were not as fortunate as the children since very few were born in fluoridated regions. The whole 35 to 44 year age group had a mean number of 16.6 DMF teeth, substantially lower than the Australian, Norwegian or New Zealand averages, but higher than the Japanese or German results.

The number of adults with edentulous mouths was not

alarming when compared with other countries. There was a high, unmet need for partial dentures and bridges.

Canadian born adults had one-third more DMF teeth than immigrants. (It would be worthwhile to explain this difference.) It seems certain that the next generation of Canadian adults will have improved dental health due to more available dental care and widespread water fluoridation.

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Principal dental health indices for 13-14 year old Quebec children

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The dental health status of Quebec schoolchildren has never been accurately examined. While it appears probable that dental disease and its effects are extensive within the child population in Quebec, no one has more than a rough notion of the quantitative dimensions of the problem. Up to this point, only three investigations have concerned themselves with certain aspects of den-

ABSTRACT

The principal dental health indices of 13 to 14 year old Quebec schoolchildren are reported. The data were generated by a province-wide probability sample of 1,093 children. Major conclusions reached by this study are: oral hygiene levels were generally poorer than expected; prevalence and severity of periodontal disease was largely limited to reversible marginal gingivitis; on an international scale there are groups of children with higher caries prevalence than that found in Quebec; loss of 1.6 permanent teeth is high for the age group and surpasses tooth loss rates reported by other studies; water fluoridation was associated with significantly lower prevalence of caries experience; socio-economic standing in Quebec is associated inversely with the DMFT index.

Pour le rapport d'hygiène buccale au Québec, on a examiné 1,093 étudiants âgés de 13 à 14 ans qui, selon toute probabilité, représentent la jeunesse de cette province. En voici les principaux points: le niveau d'hygiène buccale est généralement plus pauvre qu'on le croyait; l'incidence et la gravité des maladies périodontiques se limitent principalement à une gingivite guérissable dans les pires cas; sur le plan international, on trouve des groupes d'enfants avec un taux de caries plus élevé que les jeunes Québécois; quand il s'agit d'enfants de cet âge, une moyenne de 1.6 pour des dents permanentes perdues est élevée et dépasse les moyennes relevées dans d'autres études; on a établi un rapport entre les cas où le taux des caries est remarquablement plus bas et la fluoruration de l'eau; au Québec, la position socio-économique est inversement associée à l'indice CAOD.

tal health status in Quebec and the most recent of these was the dental component of the Nutrition Canada survey. For a variety of reasons these three reports have only partially filled the void in the dental health status data for the Province. Of these three studies, the first was by Simard and Lussier, which consisted of forms mailed to all Quebec dentists who were asked to fill out information on the first five patients visiting the dental office on a selected day.¹ Besides the obvious problem of examiner variability and the dilemma of high non-compliance by dentists (71.2 per cent of dentists did not participate), the most serious deficiency of this approach was the fact that data were not collected from a random sample of Quebec subjects, but rather from a selection of people who were users of dental services, in other words, dental patients. That dental patients are not representative of the general population can be observed from the fact that in the year 1967, only 33 per cent of the Quebec population visited a dentist² (probably the most affluent and best dentally cared-for segment of the public). Hence, data obtained are heavily biased in the direction of underestimating the true nature of the situation. As the authors themselves indicated, the investigation by Simard and Lussier was not a survey of dental health in the population, more properly it represented a study of provider services with some additional information on the dental needs of the providers' patients.

The second data source, which has been cited from time to time by the Ministry of Social Affairs, is the Dental Health Survey of Canadian Provinces 1968-70.³ This report provided relatively crude dental data which were not broken down according to sex, urban-rural differences, regional variation and most important, socio-economic differences. Hence, in terms of treatment needs, demand for care, and resources required, the national figures were inadequate for regional and local applications. It should also be borne in mind that dental examinations were carried out using non-standard dental examination procedures.

The dental component of the Nutrition Canada sur-

vey represents the third data source.⁴ Unfortunately, many of the data in this report are suspect because of inadequate sub-class sample sizes. Looking at Quebec metropolitan low income children, only seven seven-year olds, 18 11 year olds, seven 15 year olds and six 19 year olds were examined. Looking at rural children from homes of average or above-average income, nine seven year olds, six 11 year olds, 12 15 year olds and one 19 year old were examined. Epidemiologists generally consider that for dental disease prevalence surveys, minimum subgroup sample size should be of the order of 200 subjects. In this light, the samples obtained in the dental component of the Nutrition Canada survey are totally inadequate and provide completely unreliable estimates for Quebec. Confirming this view are some of the bizarre results generated by the survey. For example, it is indicated that 100 per cent of Quebec 19 year old metropolitan, low income, females visited the dentist during the 12 months prior to the survey. It is reported that while 52.79 per cent of metropolitan 19 year old males are edentulous in at least one dental arch, 0 per cent of rural 19 year olds present with this condition. Such a result is improbable. It is also reported that among children 12 to 18 years of age, the percentage of population with mild gingivitis is two to four times higher in Ontario than in Quebec.

In spite of the lack of reliable data, there are certain indications the Quebec population has an excessive level of untreated dental disease. Over the years 1965, '66, '67, the University of Montreal summer dental clinic examined 357 13 year old Montreal children who were considered to have above average dental needs. These 13 year olds had an astounding average of 12.6 teeth with untreated dental decay.⁵ Quebec data have also been gathered by the Canadian Armed Forces.⁶ In its study on 2,400 army recruits, it found that the average Quebec recruit (n=400, age=17 to 24 years) had 6.5 missing teeth while the comparable Alberta recruit had 2.9 missing teeth. So far the dental health of Quebecers has been discussed only in terms of tooth decay. Almost no data exist with regard to the level of oral hygiene, the degree of periodontal disease, the need for orthodontic care, etc.

Overall, available Quebec data are fragmentary, unreliable and incomplete. Scientific survey protocols have not been followed and a real base for building public dental programs is lacking. Questions such as "what kind of program? how much manpower? how much will it cost?" cannot be answered with any degree of confidence, except for the present denticare program. But even in the case of the denticare scheme, no proper evaluation of effectiveness is possible because baseline dental health status data are lacking.

To fill this void, a dental health survey of Quebec schoolchildren aged six to seven and 13 to 14 years was

undertaken in 1977. The study represented a partial replication of the International Collaborative Study of Dental Manpower (ICSMD) in Relation to Oral Health Status, conducted by the World Health Organization, in five countries selected initially for the distinctive features of their dental care delivery systems.⁷ In preparation for this series of major dental surveys, the WHO refined a system of standard epidemiological techniques for the purpose of ensuring dental disease data from the five studies could be legitimately compared. To further ensure comparability of data, examiners conducting the surveys in the various countries were carefully calibrated to common diagnostic criteria and examination standards. Because of this close attention to methodology and the fact that some other Canadian provinces were becoming involved with similar studies, a unique opportunity presented itself to not only collect much needed dental data for Quebec but also to compare the relative level of dental health with other jurisdictions both within and outside of Canada. This paper describes a limited set of results for the 13 to 14 year old schoolchildren that were examined in the Quebec dental survey.

METHODS AND MATERIALS

Unlike the WHO's ICSMD studies which selected a wedge-shaped geographical area from a single urban center and its surrounding semi-urban/rural environment to represent a dental delivery system, the Quebec survey drew a representative sample from the whole of the province's target population. To obtain this sample, a multistage sampling protocol, based on the type used in previous health surveys by the US National Center for Health Statistics⁸ was employed. To ensure children from all over Quebec would be selected and that these were representative of the target population in every way possible, prior stratification was carried out on the following variables: governmental administrative region (*région socio-sanitaire*); metropolitan-urban-rural residency status; cultural background of children; and socio economic characteristics of neighbourhoods (in Montreal and Quebec city only). Following this stratification, a cluster sampling strategy was employed in which schoolboards became the first stage sampling unit, schools the second stage and classrooms the final sampling unit. Finally, stratification according to family socio-economic status was achieved using the technique of "stratification after selection" based on information concerning the occupation of the head of the household determined at the time of dental examination.⁹ Occupation data were categorized according to the Blishen scale.¹⁰

As is commonly the case, decisions regarding appropriate sample size represented a compromise. Although precise sample sizes can be determined for single

variable surveys, when data are to be collected on a number of variables including oral hygiene, periodontal disease, orthodontic status, caries, etc., and when these data are to be subclassified in a number of ways, then the determination of a scientifically acceptable, yet economically feasible, sample size involves compromise. For the present survey, dental caries was designated as the key variable and decisions of sample size involved an attempt to maintain adequate numbers for various sub-classifications which would typically involve two to seven cells. Minimum sample size per cell was calculated as follows:

$$n = \frac{1.98^2 \times 4.0^2}{(0.05 \times 8.0)} = 156.8$$

where 1.98 was students t value at n=120, 4.0 was the estimated standard deviation, 0.05 was the alpha level and 8.0 was the estimated mean DMFT score. Multiplying 157 by seven gave a total sample size of 1,099.

Clinical examinations were carried out by three dentists, one a specialist in children's dentistry, another in oral diagnosis and the third in dental public health. In preparation for this work, a two-stage, two-week calibration exercise took place and the three dentists and three recording assistants were calibrated to an examination standard set by the chief of the WHO's dental unit who attended this phase. Subsequent field work in Quebec took four months. Throughout this period every effort was made to maintain standardized examination procedures and to ensure that more than one examiner would be gathering clinical data from children in any one geographical area. The clinical as-

essment itself was accomplished using a portable Adec dental chair, a chair-mounted Rolux fibre-optic dental light, #3 explorer, Williams periodontal probe, and a #4 mouth mirror. Usual personal and demographic information was noted for each subject including the family's present residency status (metropolitan >500,000 persons; urban, 10,000-499,999 persons; rural <10,000) and the occupation of the household head. The latter data were used to classify subjects into socio-economic groupings according to the seven-point Blishen scale where one represents the highest SES and seven the lowest. The following clinical data were recorded for each examined subject: a count of primary and permanent teeth; oral hygiene index (simplified);¹¹ Russell's periodontal index;¹² decayed, missing and filled teeth (DMFT) index;¹³ occurrence of non-carious missing teeth, fractured anterior teeth, space maintainers and orthodontic appliances; possession of or requirement for removable dentures (complete or partial) and fixed bridges; presence of a variety of other conditions relating to spacing of teeth; and occlusion of the dentition and related anomalies.

RESULTS

For analytical purposes, two sparsely populated provincial administrative regions, Nouveau-Québec and Côte-Nord are combined. **Table 1** describes the distribution, by region, of the 13 to 14 year old children examined. The obtained sample was close to the expected sample size. With the exception of the lightly populated Nord-Ouest, Côte-Nord and Nouveau-Québec regions, obtained samples corresponded well with the expected sample size in each region, the latter reflecting the respective population contribution to the Quebec total. The total obtained sample comprised 588 females and 505 males.

A further check on the sample distribution was the frequency classification of children by cultural background. **Table 2** shows, using the crudest of categories, that approximately four-fifths of children examined were francophone, the remainder being classified as either anglophone or allophone. (Allophone is a term, coined

Table 1				
Sampling Distribution for Dental Survey of 13 and 14 Year Old Schoolchildren in Quebec				
Administrative Region	Expected Sample	(%)	Observed Sample	(%)
Bas St. Laurent	48	(4.4)	45	(4.1)
Saguenay	62	(5.6)	52	(4.8)
Québec	180	(16.4)	156	(14.3)
Trois-Rivières	87	(7.9)	65	(5.9)
Cantons de l'Est	47	(4.3)	50	(4.6)
Montréal	572	(52.0)	554	(50.7)
Outaouais	50	(4.5)	50	(5.9)
Nord-Ouest	34	(3.1)	84	(7.7)
Côte Nord et Nouveau Québec	19	(1.7)	37	(3.4)
Total Sample ^a	1,099	(100.0)	1,093	(100.0)

^a Percentage totals affected by rounding.

Table 2		
Sample Distribution 13 & 14 Yr. Old Children		
	n	%
FRANCOPHONE	898	82.2
ALLOPHONE	80	7.3
ANGLOPHONE	115	10.5
TOTAL	1,093	100.0

in Quebec, applied to cover groups that might be described as immigrants to the province whose mother tongue is neither french nor english). The obtained distribution pattern corresponds well to the reported figures on mother tongue in Quebec.¹⁴

Of prime importance when conducting a dental examination of children is to establish if they have a dental condition requiring immediate attention. For the purpose of this study, the term immediate attention was applied to conditions that had recently or were present-

ly causing pain, or, in the opinion of the examiner, were likely to cause pain within the ensuing days. On this basis, **Table 3** shows that 73 per cent of the 13 and 14 year olds did not require immediate treatment, while seven per cent needed relief from existing pain and another 20 per cent were likely to experience pain shortly, primarily from teeth with possible pulpal involvement. An important qualification is in order here because of the fact that as in virtually all dental surveys, no x-rays were used to detect or to assess the extent of dental caries.

The oral hygiene index (simplified) is an index introduced by Greene and Vermillion that is a composite of separate soft debris and calculus scores.¹¹ **Tables 4 and 5** present the figures relevant to the two components of the OHI(S), in each case values between 0.0 (no accretion) and 3.0 (maximum accretion) being possible. Several interesting findings emerge. First, only 21 of 1,093 children were plaque (debris) free and fewer than 15 per cent had an index below 0.5. Second, in line with expectation, females had cleaner teeth than males. Third, as **Table 5** indicates, significant quantities of dental calculus were found in a very small group of 13 to 14 year old children. Fourth, the OHI(S), being the sum of the mean debris and calculus scores is 1.24, with 88.7 per cent of this score being due to debris.

The oral hygiene of an individual is a function of many factors and most of them relate to an individual's attitude to dental health, his socio-economic status, etc. To determine whether children living in metropolitan regions are likely to have cleaner teeth than those from

Table 3

Classification of Dental Conditions Requiring Immediate Attention in 13 & 14 Yr. Old Quebec Schoolchildren

Classification	Per Cent		
	Males n=505	Females n=588	Combined n=1,093
None	74.3	71.8	72.9
Relief from pain	5.5	7.7	6.7
Pulpally involved teeth	18.6	18.0	18.3
Lesions on soft tissues	1.2	1.7	1.5
Other	0.4	0.9	0.6

Table 4

Distribution of Greene & Vermillion Debris Scores in 13 & 14 yr. old Quebec Schoolchildren

Debris Index	Per Cent		
	Males n=505	Females n=588	Combined n=1,093
0.00	1.8	2.0	1.9
0.01-0.49	8.1	14.6	11.6
0.50-0.99	22.4	33.0	28.1
1.00-1.49	33.1	26.0	29.3
1.50-1.99	18.2	14.1	16.0
2.00-2.49	10.7	6.3	8.3
2.50-2.99	4.0	2.0	2.9
3.00	1.0	0.2	0.5
Not Scored	0.8	1.7	1.3
Mean Score	1.23	1.00	1.10
Std. Error	0.029	0.025	0.019

Table 5

Distribution of Greene & Vermillion Calculus Scores in 13 & 14 yr. old Quebec Schoolchildren

Calculus Index	Per Cent		
	Males n=505	Females n=588	Combined n=1,093
0.00	60.6	64.5	62.7
0.01-0.49	26.7	25.9	26.3
0.50-0.99	9.5	6.8	8.1
1.00-1.49	2.0	0.9	1.4
1.50-1.99	0.2	0.2	0.2
2.00-2.49	0.2	0.2	0.2
Not Scored	0.8	1.7	1.3
Mean Score	0.16	0.12	0.14
Std. Error	0.012	0.010	0.007

rural regions, a two-way analysis of co-variance with ethnic group as a co-factor and SES, examiner and dentist: population ratio as co-variables was undertaken.¹⁵

Table 6 shows the mean OHI(S) scores both before and after adjustments for factors and variates. What makes these data so interesting is that raw or unadjusted OHI(S) means were significantly different among the three residency groups (ANOVA, $p < 0.01$) whereas, after adjustment for the other influencing variables, the difference among means becomes non-significant. A similar analysis of co-variance focusing on ethnic group reveals real differences in OHI(S) among the three categories remaining even after the extensive data adjustment, as **Table 7** demonstrates.

Periodontal disease is the second most important dental condition behind dental caries. Gingivitis is a common problem among teenage children. The pattern of periodontal disease in Quebec's 13 and 14 year olds, as measured with Russell's periodontal index,¹² is shown in **Table 8**. Two aspects of the results deserve particular comment. First, if an index score of less than 0.5 is assumed to be acceptable, it is evident that close to 60 per cent of the children are in a generally good condition from a periodontal point of view. Second, the mean level of periodontal disease is approximately 20 per cent lower in females than in males. Since gingival inflammation and dental plaque are known to be correlated, the second finding reflects to some degree on the consistency of the data. That is to say, both the sign

and the magnitude of the percentage difference in the gingival inflammation parallel those for the debris scores.

In order to compare Quebec results with those ob-

Table 7

Oral Hygiene Index (simplified) in 13 and 14 year old Quebec Schoolchildren

	Unadjusted Mean ^a		Adjusted Mean ^{b,c}	
	n ^d	OHI (S)	n ^e	OHI (S)
Francophone	891	1.29	812	1.26
Allophone	76	1.09	72	1.18
Anglophone	111	0.98	101	1.01
TOTAL	1,078	1.25	985	1.23

^a Difference among unadjusted means significant, $p < 0.01$.

^b OHI (S) scores adjusted for residence status, SES, examiner, and dentist:population ratio.

^c Difference among adjusted means significant, $p < 0.01$.

^d Sample size reduced from 1,093 because of 15 subjects not scoreable for OHI (S).

^e Sample size further reduced because of missing SES data.

Table 6

Oral Hygiene Index (simplified) in 13 and 14 year old Quebec Schoolchildren

	Unadjusted Mean ^a		Adjusted Mean ^{b,c}	
	n ^d	OHI (S)	n ^e	OHI (S)
Metropolitan	391	1.12	362	1.21
Urban	385	1.24	349	1.19
Rural	302	1.41	274	1.30
TOTAL	1,078	1.25	985	1.23

^a Difference among unadjusted means significant, $p < 0.01$.

^b OHI (S) scores adjusted for cultural influence, SES, examiner, and dentist:population ratio.

^c Difference among adjusted means not significant.

^d Sample size reduced from 1,093 because of 15 subjects not scoreable for OHI (S).

^e Sample size further reduced because of missing SES data.

Table 8

Distribution of Periodontal Disease in 13 & 14 yr. old Quebec Schoolchildren

Russell's Periodontal Index	Per Cent		
	Males n=505	Females n=588	Combined n=1,093
0.00-0.24	31.2	36.5	34.1
0.25-0.49	20.2	28.2	24.5
0.50-0.74	22.4	19.0	20.6
0.75-0.99	15.4	10.4	12.7
1.00-1.24	8.9	4.6	6.6
1.25-1.49	1.2	0.7	0.9
1.50 & over	0.4	0.3	0.4
Not Scored	0.2	0.2	0.2
Mean Score	0.50	0.41	0.45
Std. Error	0.016	0.013	0.010

tained in 13 to 14 year old children elsewhere, it is necessary to examine the prevalence of gingival inflammation in a way consistent with the method used to report ICSDM results. Unfortunately, the WHO chose an unorthodox, somewhat crude method of reporting gingival inflammation. However, it is possible to transpose the Quebec data to the identical format, **Figure 1** illustrates the results. The histogram shows the average number of tooth units with gingivitis per child examined. From the graph it appears that Quebec children are relatively well off compared to those from other jurisdictions.

Dental caries prevalence has, traditionally been the cause of greatest concern in dental surveys. This preoccupation has not been entirely misplaced as the bulk

of dentists' services (also time spent in treatment and income generated) are aimed at treating tooth decay. For this reason, the findings from the Quebec dental survey are presented to show a variety of relationships. **Table 9** gives an indication of the age-sex specific decayed, missing and filled teeth (DMFT) scores. The numbers show the overall caries experience in 13 and 14 year olds combined is high (a mean of 9.0 permanent teeth affected). Further, with an average of 5.0 decaying teeth, over half the affected teeth presented with untreated lesions. Given the high total DMFT score, a disturbingly low 2.4 teeth had been filled. Interestingly, there was a statistically significant difference between males and females in the mean number of filled teeth, suggesting females are somewhat more concerned about their health and are more prepared to obtain needed treatment. Finally, as one would expect, in the case of all three components of the DMFT index, scores were higher for 14 year olds than for 13 year olds.

Dental caries prevalence in children is believed to be influenced by such variables as a family socio-economic status, attitude to dental health and dental care, access to dental services, existence of water fluoridation, etc. In Tables 10, 11 and 12 the caries data have been organized to show the effect of some influencing variables on the DMFT score. **Table 10** shows the caries data by socio-economic status (SES) where a score of one represents the most favourable SES level while seven posits the opposite extreme. What the data demonstrate is that in Quebec, the family SES has a profound association with the child's dental caries score. A simple linear regression analysis of variance

Table 9

Caries Experience in the Permanent Dentition of 13 and 14 year old Quebec Schoolchildren

Age (Yrs)	Sex	n	2° Teeth Present	Mean Number Per Child			
				D	M	F	DMFT
13	M+F	496	25.3	4.9	1.4	2.2	8.5
	M	238	25.2	4.9	1.2	1.9	8.0
	F	258	25.3	4.9	1.6	2.5	8.9
14	M+F	597	25.6	5.1	1.7	2.5	9.4
	M	267	25.4	5.3	1.8	2.0]**	9.3
	F	330	25.7	5.0	1.6	3.0]	9.7
13+14	M+F	1,093	25.4	5.0	1.6	2.4	9.0
	M	505	25.3	5.1	1.5	1.9]**	8.6 *
	F	588	25.6	5.0	1.6	2.8]	9.3

* Significant difference $p < 0.05$

**Significant difference $p < 0.01$

Table 10

DMFT by Socio-Economic Group in 13 & 14 yr. old Quebec Schoolchildren

Blischen Scale	n	DMFT	SE
1	37	6.40	0.77
2	145	7.36	0.41
3	94	8.91	0.62
4	58	8.44	0.74
5	335	8.96	0.31
6	154	9.89	0.43
7	177	9.71	0.43
ANOVA (REG)		F=20.4,	$p < 0.001$

Table 11

Caries Experience by Metro-Urban-Rural Residence in 13 and 14 year old Quebec Schoolchildren

	n ^c	Adjusted Means ^{a, b}			
		D	M	F	DMFT
Metropolitan	371	4.3	1.2	2.6	8.1
Urban	352	5.0	1.4	2.8	9.2
Rural	277	5.8	2.0	1.8	9.6
TOTAL	1,000	5.0	1.5	2.4	8.9

^a DMFT and component scores adjusted for cultural influence, SES, examiner bias and dentist:population ratio.

^b Difference among adjusted means significant for DMFT and its three components, $p < 0.01$

^c Sample size reduced from 1,093 because of missing SES data.

shows the inverse relationship between socio-economic standing and DMFT to be highly significant.

The relationship between metropolitan-urban-rural residency status and the DMFT index as well as its components is presented in **Table 11**. Because residency status may be strongly co-related to ethnic composition of the population, the population's SES and the availability of dentists, these variables along with examiner influence were entered into the analysis to isolate only that variation in the DMFT scores independently attributable to residency status. The data in **Table 11** therefore represent the adjusted mean scores from a two-way analysis of co-variance in which ethnic group was a factor and SES, examiner, and dentist: population ratio were co-variables. The data uphold virtually every *a priori* hypothesis. The total caries experience is lowest in the metropolitan group and highest in the rural sample and similarly, for the decayed and missing teeth components of the index. To this point, the urban group neatly falls between the metropolitan and the rural samples for the caries indices considered. Only in the case of the F component is there an exception such that urban children seemed to present with a larger absolute number of filled teeth.

The advantage of using a multivariate analytical approach becomes apparent when some of the adjusted mean scores are compared to their raw, unadjusted counterparts. For example, the difference in unadjusted DMFT scores between rural and metropolitan groups was 2.9 teeth, whereas the analogous difference for adjusted means was roughly one-half that, or 1.5 DMF

teeth. **Table 11** also demonstrates the advantages of examining individual components of the DMFT index. While the overall DMFT score indicates caries experience in the rural group was approximately 18.5 per cent higher than in the metropolitan group, the order of difference for individual components was much greater. For the decayed teeth component the analogous difference was 35 per cent and for missing teeth, 67 per cent.

Yet a third ordering of the DMFT data is by ethnic group as per **Table 12**. Similar to **Table 11**, the co-variance analysis adjusts the mean caries scores so differences ascribable to ethnic group *per se* are displayed. Several features are striking in this table, although small subclass sizes impair the results somewhat. First, the anglophone group is not the one with the lowest DMFT score. This claim belongs to allophone children. Second, both allophone and anglophone children together have caries levels considerably below those recorded by francophones. Third, both the decayed and missing teeth components of the index are distressingly high among francophones. Without the co-variance adjustment these differences become even more pronounced.

Table 12					
Caries Experience by Ethnic Group in 13 and 14 year old Quebec Schoolchildren					
	n ^c	Adjusted Means ^{a,b}			
		D	M	F	DMFT
Francophone	819	5.3	1.7	2.4	9.4
Allophone	76	3.9	0.7	1.6	6.1 ^d
Anglophone	105	3.1	0.5	3.1	6.7
TOTAL	1,000	5.0	1.5	2.4	8.9

^a DMFT and component scores adjusted for residence status, SES, examiner bias, and dentist: population ratio.
^b Difference among adjusted means significant for DMFT and its three components, $p < 0.01$
^c Sample size reduced from 1,093 because missing SES data.
^d Rounding error.

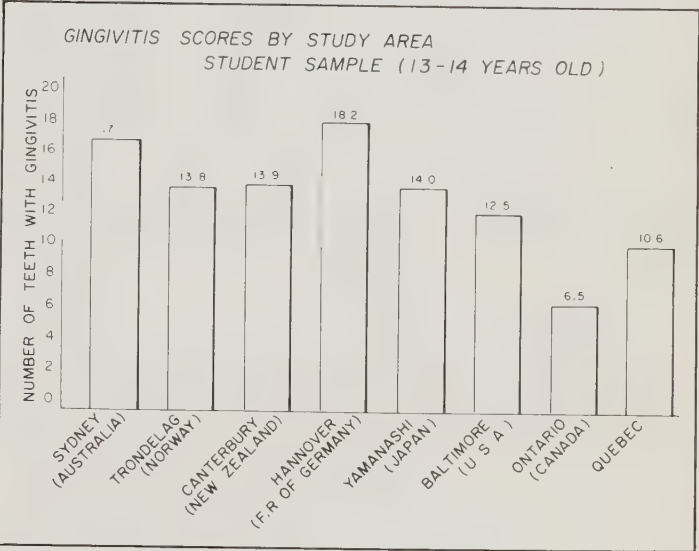


Figure 1

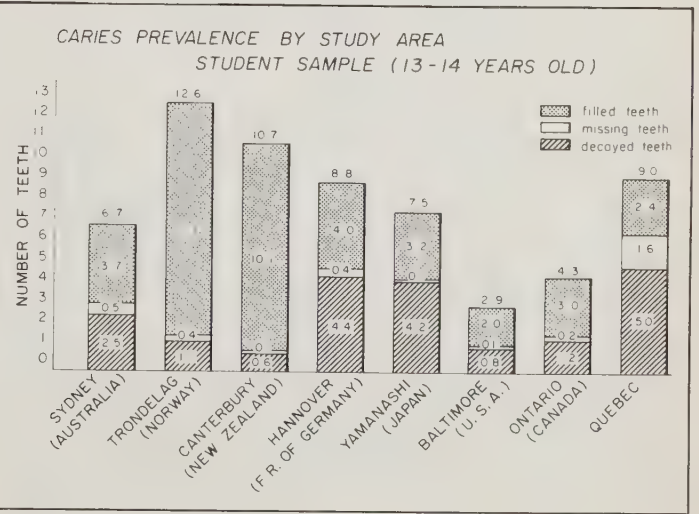


Figure 2

Before leaving the presentation of caries prevalence data, it is instructive to examine how Quebec compares with other ICSDM and related studies. **Figure 2** is a histogram showing, for 13 and 14 year olds, the various D, M, F and DMFT results. This graph shows Quebec children have a high caries rate but by no means the highest reported in this series of studies. What does distinguish the Quebec situation is the appallingly high tooth loss rate. With an average of 1.6 missing per-

manent teeth among 13 and 14 year old Quebec schoolchildren, the level of tooth loss is more than three times higher than the next highest group studied (Australia) and fully eight times higher than determined in an Ontario study. When this is added to the fact that the average number of frankly decaying teeth was 5.0 (also the highest among all the reported studies), it is clear there should be serious concern over the dental health of Quebec's schoolchildren.

The treatment ratio (F/DMFT). It is a common practice to use the ratio of F/DMF teeth as a proxy measure of dental treatment received. Not surprisingly, it is usual to expect the most favored SES groups to show the highest F/DMFT per cent, with lower groups demonstrating inferior treatment ratios. The Quebec data in **Table 13** bear out this relationship. The most favored SES group possesses the highest treatment ratio (65 per cent), and successively lower groups have monotonically lower percentages of carious teeth filled. The consistency of the trend is statistically significant.

Analogous to the dental caries section, the F/DMFT data have been reorganized to demonstrate the influence of residency status and ethnic group on treatment ratios. Using the same co-variance approach, **Table 14** shows both raw and adjusted mean scores for the metropolitan, urban, and rural groups. As the table indicates, the difference among the adjusted means is statistically significant although the metropolitan and urban populations don't seem to be that far apart. The

Table 13

**Ratio F/DMF by Socio-Economic Group
13 & 14 yr. old Quebec Schoolchildren**

BLISHEN SCALE	Per Cent		
	n	F/DMF	SE
1	36	65.1	6.4
2	138	53.3	3.4
3	92	50.0	4.0
4	57	32.9	5.1
5	324	29.6	2.0
6	151	18.0	2.4
7	170	17.4	2.3
ANOVA (REG) F=113.0, p<0.001			

Table 14

**Ratio of F/DMF Teeth by Residence Status in
13 and 14 year old Quebec schoolchildren**

	Unadjusted ^a		Adjusted ^{b,c}	
	n ^d	F/DMF	n ^e	F/DMF
Metropolitan	380	41.8%	351	37.2%
Urban	381	29.6	345	33.2
Rural	300	17.2	272	22.6
TOTAL	1,061	30.5	968	31.7

^a Difference among unadjusted means significant, p<0.01.

^b F/DMF scores adjusted for ethnic influence, SES, examiner, and dentist: population ratio.

^c Difference among adjusted means significant, p<0.01.

^d Sample size reduced from 1,093 because of 30 subjects with 0 DMFT and 2 not scoreable.

^e Sample size further reduced because of missing SES data.

Table 15

**Ratio of F/DMF Teeth by Ethnic Group in
13 and 14 year old Quebec Schoolchildren**

	Unadjusted ^a		Adjusted ^{b,c}	
	n ^d	F/DMF	n ^e	F/DMF
Francophone	880	26.0%	801	29.2%
Allophone	70	44.5	66	34.3
Anglophone	111	57.1	101	50.1
TOTAL	1,061	30.5	968	31.7

^a Difference among unadjusted means significant, p<0.01.

^b F/DMF scores adjusted for residence status, SES, examiner, and dentist: population ratio.

^c Difference among adjusted means significant, p<0.01.

^d Sample size reduced from 1,093 because of 30 subjects with 0 DMFT and 2 not scoreable.

^e Sample size further reduced because of missing SES data.

major split seems to be between the rural group and the two urbanized groups (a plausible finding.) The analysis also demonstrates the data adjustment has had a major effect on the pattern which emerges from the percentages shown. Not only is the extreme polarity in the raw data somewhat moderated, but the position of the urban group is altered to better reveal just where the major impact of residency status on dental caries occurs.

A similar analysis aimed at clarifying the differences in treatment obtained among ethnic groups is presented in **Table 15**. Figures show that even after adjustment for a number of important co-factors and co-variates, there remains a significant difference among the three groups in the proportion of filled to carious teeth.

Water fluoridation. Although this survey was not designed to evaluate the dental caries effect of being born and raised in a fluoridated community, it was decided to compare children living in a fluoridated area with those in non-fluoridated centres. As **Table 16** indicates, approximately 19 percent of the children examined were living in fluoridated communities whereas roughly 15 per cent of Quebecers on potable water supplies are actually consuming fluoridated water.¹⁶ In spite of the lack of control over residence history, children living in fluoridated centres had significantly less dental decay than did their colleagues in non-fluoridated communities.

Service utilization. To gain some notion of the children's utilization of dental services and perception of their own dental health status, two simple questions were posed to each child. First, to the question "Did you receive dental care in the last 12 months?", 60 per cent replied affirmatively. As **Table 17** indicates, there seemed to be little tendency for girls to more frequently respond positively to this question than for boys. To see whether those reporting a dental visit during the past 12 months were dentally more fit than those who had not seen a dentist recently, data were organized to compare several dental health indices between the two groups. **Table 18** shows, in the most concise way possible, the results from this comparison. With the

exception of the missing tooth index and overall caries experience index, children reporting a recent dental visit were in significantly better dental condition. This was particularly true for the decayed teeth index where the group with recent visits was seen to have 2.3 fewer frankly decaying teeth. The same group had 2.6 more teeth with fillings than did the children not reporting a dental visit within the past 12 month period.

The second question asked was, "is there anything wrong with your teeth or gums now?" **Table 19** indicates 70 per cent of the children replied "no". Boys were more likely to answer in the negative than girls. **Table 19** also shows a concern over dental health exists. This is likely to be for dental caries, even though it was shown earlier that gingival inflammation is a very common problem among these teenagers. When a comparison is made between the "yes" and the "no" respondents to question two, it is clear from **Table 20** that those who claimed there was nothing wrong with their teeth or gums were not in much better dental condition than

Table 16		
DMFT Experience in 13-14 year old Quebec Children by Water Fluoride Status of Community		
GROUP	NUMBER	MEAN DMFT
FLUORIDE	207	6.86
NO FLUORIDE	886	9.48
Difference between means, p<001 Standard error of difference, 0.93		

Table 17			
Question — "Did You Receive Dental Care in the Last 12 Months?" 13 & 14 yr. old Quebec Schoolchildren			
Response	Per Cent		
	Males n=505	Females n=588	Combined n=1,093
NO	41.6	38.6	40.0
YES	58.4	61.4	60.0

Table 18			
Question — "Did You Receive Dental Care in the Last 12 Months?" 13 & 14 yr. old Quebec Schoolchildren			
	Respondents' Disease Index		
	Yes (n=656)	No (n=437)	Anova ^a
Oral Hygiene (S)	1.1	1.4	SIG.
Russell's P.I.	.4	.5	SIG.
Decayed Teeth	4.1	6.4	SIG.
Missing Teeth	1.6	1.4	N.S.
Filled Teeth	3.4	0.8	SIG.
DMF	9.2	8.7	N.S.
F/DMF %	43.0	11.7	SIG.
^a Because these tests are not independent, the significance probability was set at 0.01.			

those who felt there was something wrong. For example, while children who reported "nothing wrong" had 33 percent fewer decaying teeth (a highly significant difference), they presented with a disturbing average of 4.4 frankly carious teeth. This suggests children do not accurately self-diagnose and their perception of their own dental health status is not an adequate decision-making criterion for seeking care.

DISCUSSION

The data presented represent a small portion of information gathered by this dental survey of 13 to 14 year old Quebec schoolchildren. Collected data on fractured teeth, orthodontic care, congenital dental conditions, prosthetic status, dental occlusion, and a number of other anomalies cannot be squeezed into a paper of this size. Nevertheless, even the limited findings reported here have implications for future children's dental care policies in Quebec. The strength of these implications is not related to the reported findings *per se*, but it is tied to four main features of the study: a large sample of a restricted age group which could be satisfactorily sub-classified; a sample representative of the whole province by virtue of strict adherence to accepted survey protocol; a continual emphasis on the quality of the clinical dental examinations themselves; a rigorous data screening and editing phase prior to the actual data analysis.

Several noteworthy findings concerning the dental health of Quebec school children emerged from this survey: the high overall caries activity; the remarkably high rate of permanent tooth loss; the influence of living in rural areas on both the dental caries rate and the likelihood of having received treatment for dental caries; the cultural influences on oral hygiene, caries, and treat-

ment for caries; the impact of socio-economic status on these same variables; and the futility of relying on self-awareness of specific dental problems to generate desired dental care seeking behaviour.

The oral hygiene status of those examined was slightly poorer than expected in similarly aged North American children. The U.S. National Center for Health Statistics¹⁷ has published OHI(S) figures for 13 and 14 year olds and from this it can be seen that the debris index (DI) in the U.S. was 0.81 versus 1.10 in Quebec. Hunt et al¹⁸ reported a mean DI of 0.68 in 936 similarly aged Ontario students, while a recent Alberta¹⁹ survey established a DI of 0.66 for 1,254 children aged 13 to 14 years. The calculus index was uniformly low, being only 0.14 in Quebec, 0.10 in the U.S., 0.13 in Ontario and 0.06 in Alberta.

The periodontal disease pattern in 13 to 14 year old Quebecers suggests most of these children are affected by a mild, relatively reversible marginal gingivitis. Indeed, close to 60 per cent had a periodontal index of 0.5 or less. Females had better gingival health than males. A comparison with studies from other countries and provinces (**Figure 1**) shows periodontal health in Quebec 13 to 14 year olds compared favorably.

On the question of dental caries prevalence, it must first be recognized that in North America a mean DMFT of 9.0 unusually high. The most reliable U.S. data for a similar age group were collected during 1966 to 1970 and at that time the mean DMFT in U.S. 13 to 14 year olds was 5.3.²⁰ Recent large scale surveys in Manitoba,²¹ Ontario¹⁸ and Alberta¹⁹ have placed the 13 to 14 year olds' DMFT at 5.4 (13 year olds only), 4.8 and 4.9 respectively. Thus the caries experience in the permanent dentition of Quebec children seems to be approximately two times higher than in comparable groups elsewhere in North America. On an international scale, as shown in

Table 19			
Question — "Is There Anything Wrong With Your Teeth or Gums Now?" 13 & 14 yr. old Quebec Schoolchildren			
Response	Per Cent		
	Males n=505	Females n=588	Combined n=1,093
No	73.9	65.8	69.5
Yes — Teeth	25.0	32.3	28.9
Yes — Gums	0.2	1.0	0.6
Yes — Teeth and Gums	0.4	0.3	0.4
Yes — Other	0.0	0.1	0.1
Don't Know	0.6	0.3	0.5

Table 20		
Question — "Is There Anything Wrong With Your Teeth or Gums Now?" 13 & 14 yr. old Quebec Schoolchildren		
	Respondents' Disease Index	
	Yes (n=313)	No (n=750)
Oral Hygiene (S)	1.4	1.2
Russell's P.I.	0.5	0.4
Decayed Teeth	6.6	4.4
Missing Teeth	1.7	1.5
Filled Teeth	1.9	2.6
DMF	10.2	8.5
D/DMF %	63.0	51.2

Figure 2, the Quebec mean DMFT level is exceeded by children in Trondelag, Norway and Canterbury, New Zealand.

But the DMFT index hides a more serious problem. From **Figure 2** it can be seen that compared to the international ICSDM surveys, permanent tooth loss in Quebec is appallingly high with the average Quebec 13 to 14 year old having lost 1.6 teeth. This is more than three times higher than in Australia, 16 times higher than in New Zealand, and eight times that in Ontario. The number of decaying but untreated teeth in the mouth is also higher in the Quebec sample than in the other comparable groups.

The question of the high tooth loss levels poses a great challenge to Quebec's dental profession and to government health planners. However, rapid progress will be made only if certain factors are understood. The first point is that while prevention is preferable to treatment, tooth loss can be avoided not only through prevention, but also through restorative treatment, or both. It should be evident from **Figure 1** that Quebec's tooth loss rate is high, not simply because the caries rate is high but because the caries that does occur is treated by extraction and not restoration, confirming the ICSDM finding that "tooth loss does not bear a close relationship to disease prevalence patterns."²² It follows that slowly reducing the caries rate over a period of years by virtue of caries prevention, in the absence of other changes, will not guarantee a rapid decline in tooth loss. Given this prevention programs may simply be too little, too slow.

A second factor relates to the complexity of behaviours that leads to tooth loss. Once it is conceded that in jurisdictions with equally high caries rates as Quebec the level of tooth loss is significantly lower, emphasis can be placed on factors other than disease prevalence which bear on tooth loss. These factors, which may be labelled behavioural, are difficult to analyze. Nevertheless, some clues are beginning to appear. In the original five ICSDM surveys of adults, it was observed that "satisfaction with the condition of one's mouth shows close correlation with the percentages of edentulousness in each sample area. The more edentulous a population, the more satisfied they appear to be."²² If this finding has any implication for Quebec, there should be concern about the dental advice, or even the relevant role model, Quebec schoolchildren are receiving from their parents. Also, before treatment begins, patient and dentist come to some sort of contractual agreement about what should be done. It follows, therefore, that dentists too are implicated in every decision to extract teeth.

Taken together, the suggestion is that a vigorous and multifaceted campaign should be undertaken to promote the retention of natural dentition. This is analogous to saying prevent tooth mortality before morbidity. In the Quebec setting, this could take the form of reorienting dental health education efforts aimed at the public and/

or altering the fee schedule to reduce the economic incentive of providing extractions while promoting restorations. In connection with children's dental care programs, it should be noted that in 1976 the Saskatchewan's children's program resulted in 8.5 extractions per 100 fillings placed, in Prince Edward Island, 16.7, in Nova Scotia, 23.6, while in Quebec 38.9 teeth were removed for every 100 restored under the children's dental insurance program.²³ The most urgent dental health challenge in Quebec is to change this pattern of tooth loss.

The impact of socio-economic standing on the different dental health variables reported in this study is very consistent — the upper socio-economic groups are better off in relation to those in lower categories. Yet the finding that in Quebec 13 to 14 year olds the caries experience (DMFT) is related to SES is not consistent with several other reports in the dental literature.^{19, 20, 21, 24, 25} This may suggest that associated with the lower socio-economic groups in Quebec is a family attitude which places relatively less value on dental health. If this is so, the creation of the children's dental insurance program cannot be expected, by itself, to alleviate this discrepancy. Consistent with many studies, the F/DMFT ratio is strongly influenced by socio-economic standing as exemplified by the data in **Table 13**. Besides the clear trend in the numbers showing declining F/DMFT ratios in the lower SES groups, disparity between the highest and lowest SES groups is far greater for this variable than for caries experience. It should be noted that at the time of the survey, 13 to 14 year old children in Quebec were not, and had never been, covered by a universal dental insurance program. It is to be expected, therefore, that with coverage now extended to include this age group, the SES disparities in the F/DMFT ratio will diminish somewhat.

The treatment level for dental caries is usually evaluated by the F/DMFT ratio. In other words, the proportion of an individual's teeth with caries experience that has received treatment in the form of successful fillings is established. Thus a favorable treatment ratio would be near one, or 100 per cent. Conversely, a ratio near 0 would indicate the predominant existence of untreated decay or missing teeth. While it is common to interpret higher F/DMFT ratios as being associated with superior dental health, this may be an oversimplification. Good practice suggests that F/DMFT ratios should be compared **at a given level of mean caries experience**, but when this latter differs significantly among groups, comparison of treatment ratios is tenuous.

There appears to be some uncertainty as to just how the F/DMFT ratio should be computed. The WHO suggests that an F/DMFT be calculated for each individual and these ratios averaged for the whole sample. On the other hand, Hunt et al have stated this procedure may lead to biased results because of certain statistical "arti-

facts" of which several simulated illustrations were given.¹⁸ It would seem these artifacts were primarily the common problem of estimating averages from very small samples. Since sample sizes for properly conducted dental surveys are relatively large, this problem tends to disappear. Actually, divergence of approach between Hunt et al and the WHO relates to one of meaning. The overall ratio calculated by the WHO recommended procedure gives the mean F/DMFT for the "average" child in the sample. The Hunt et al procedure, which calculates sample means for the D, M, F and DMFT indices and then forms the F/DMFT ratio, gives the proportion of the total DMF teeth filled in the sample. This latter approach, by far the most common, gives a result which is usually, but not always, close to the F/DMFT ratio exhibited by the average individual. To illustrate with the Quebec data, the Hunt et al procedure gives an F/DMFT of 26.52 per cent while the WHO method works out to 30.48 per cent. Thus, to describe the average subject in terms of the F/DMFT ratio, it is best to resort to the WHO suggested algorithm.

On the question of residency status, the data show that in spite of adjusting for a number of influencing variables correlated with metropolitan-urban-rural residency status, significant dental health differences remain. Although the caries experience is not inordinately greater in rural children, when this is combined with the fact that their treatment level is well below that of both metropolitan and urban groups, it becomes clear there are significant gaps in dental health in the rural areas. It would probably require major preventive and educational efforts, together with certain structural approaches to improving the supply of dental services in rural areas, before desired dental health improvements would take place. Finally, there is the persistent influence of cultural grouping on dental health status. Given various adjustments made to the data, there are culturally related factors which play on oral hygiene levels, caries experience, treatment sought, etc. Whether a children's dental insurance program can effect significant changes in the role played by cultural factors, remains to be seen. Unfortunately, there has not yet been an adequate assessment of the Quebec children's denticare program. What is known is that utilization of the program has increased significantly by all age groups in each year since its inception. But the fact that utilization is merely defined as one or more contacts with the dentist really weakens the information supplied by such data.

In summary, an attempt has been made to describe, in a limited way, the dental health status of Quebec schoolchildren aged 13 to 14 years, based on a province-wide survey involving 1,093 children. Major conclusions reported in this study are: (1) oral hygiene levels were generally poorer than had been expected; (2) the prev-

alence and severity of periodontal disease was largely limited to reversible marginal gingivitis; (3) dental caries prevalence was significantly higher than in other groups of similarly aged North American children; (4) on an international scale there are groups of children with higher caries prevalence than that found in Quebec; (5) loss of 1.6 permanent teeth is high for the age group and surpasses tooth loss rates reported by other studies; (6) water fluoridation was associated with significantly lower prevalence of caries experience; (7) socio-economic standing in Quebec is associated inversely with the DMFT index; (8) socio-economic standing appears to be associated with the F/DMFT ratio; (9) in Quebec, residency in rural areas, even after statistical adjustment for other influencing variables, is associated with lower levels of dental health; (10) cultural factors, independent of concomitant variables, are associated with differing levels of dental health. Reports on Quebec six and seven year old schoolchildren are forthcoming.

This research was supported by Grant Number 750267 from the Conseil de la Recherche en Santé du Québec.

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The authors would like to acknowledge the assistance of J. O'Loughlin, project coordinator and M. Rodrigues, data processing consultant.

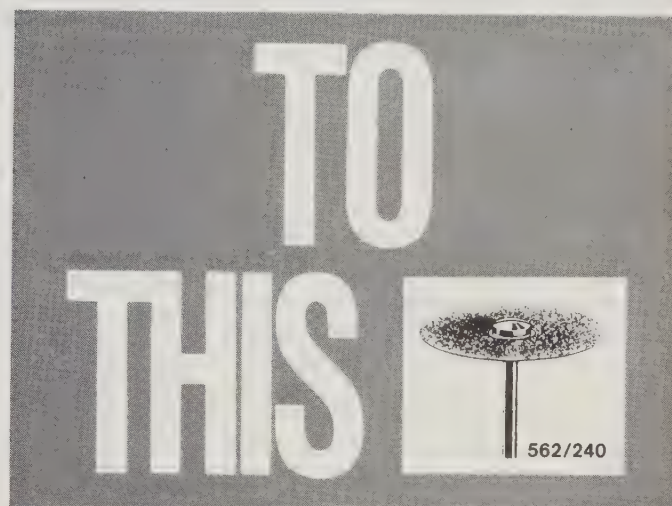
J.W. Stamm, DDS, MScD, DDPH, FRCD(C)
Associate Professor and Chairman, Department of
Community Dentistry, McGill University

C.T. Dexter, BSc, DDS
Director, Division of Paedodontics
McGill University

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Roentgenology, the University of Texas



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Announcements

We urge readers to confirm meeting dates with the contact listed with each announcement.

Canada

Canadian Dental Association, 1980 National Convention, Halifax, Nova Scotia, July 13-16, 1980. Contact: Dr. T.D. Ingham, Nova Scotia Dental Association, P.O. Box 604, Halifax, N.S. B3J 2R7.

L'Association Dentaire Canadienne, Congrès national 1980, Halifax, Nouvelle-Écosse, 13-16 juillet 1980. Pour renseignements: Dr T.D. Ingham, Association Dentaire de la Nouvelle-Écosse, B.P. 604, Halifax, N.-É. B3J 2R7.

March

Canadian Dental Association . . . Interim Board Meeting, March 7 and 8 Annual Convention, July 13-16 and Board of Governors Meeting, September 26 and 27.

April

Ontario Dental Association 113th Annual Spring Meeting. The Sheraton Centre, Toronto, Ontario, April 27-30, 1980. Contact: Mrs. W.C. Durham, 234 St. George Street, Toronto, Ontario M5R 2P1.

May

Canadian Academy of Periodontology Annual Meeting, Chateau Champlain Hotel, Montreal, Que., May 16-19, 1980. Contact: Dr. J.P. Masson, Drummond Medical Building, 1414 rue Drummond, Suite 1110, Montreal, Que. H3G 1W1.

British Columbia College of Dental Surgeons 1980 Convention, Hyatt Re-

gency Hotel, Vancouver, May 25-28, 1980. For further information, please contact: Venue West Ltd., 1704 — 1200 Alberni Street, Vancouver, B.C. V6E 1A6, phone: (604) 681-5226.

Les journées dentaires du Québec, Queen Elizabeth Hotel, Montreal, Quebec, May 25-29, 1980. Contact: Doctor Morton Lang, 5253 Décarie, Suite 210, Montreal, P.Q. H3W 3C3.

July

Canadian Academy of Restorative Dentistry Annual Scientific Sessions, Chateau Halifax, Halifax, Nova Scotia, July 11-12, 1980. Contact: Dr. D.C.T. MacIntosh, Scientific Chairman, 200 Medical Arts Building, 5880 Spring Garden Rd., Halifax, N.S. B3H 1Y1.

Canadian Academy of Prosthodontics, Halifax, Nova Scotia, July 11-12, 1980. Contact: Dr. B.M. Jackson, secretary-treasurer, 22-22 Water St. South, Kitchener, Ont. N2G 4K4.

The Canadian Association of Oral and Maxillofacial Surgeons 1980 Clinical Symposium on Current Concepts in Temporomandibular Joint: Diagnosis and Management, Harbour Castle Hilton, Toronto, Ontario, November 1-3, 1980. Contact: Dr. S.J. Levitz, #212—77 Queensway West, Mississauga, Ont. L5B 1B7.

International

March

San Diego Dental Medical Symposium, Aspen, Colorado, U.S.A., March 1-8, 1980. Contact: Mr. Daman Nelson, 110 W "A" St., San Diego, CO 92101, U.S.A.

Health, New Orleans, Louisiana, U.S.A., March 6-9, 1980. Contact: Dr. Eugene W. Lewis, 4604 S. Harvard, Tulsa, OK 74135, U.S.A.

Third International Conference on Dental Electrosurgery, Miami, Florida, U.S.A., March 7-8, 1980. Contact: Dr. Jacob Kline, School of Engineering

and Environment Design, University of Miami, P.O. Box 24894, Coral Gables, FL 33124, U.S.A.

Twentieth Annual Symposium and Short Course of the Center for Craniofacial Disorders and Cleft Palate Center: Rosenthal Auditorium, Montefiore Hospital and Medical Center, 111 East 210th Street, Bronx, New York 10467, U.S.A., March 21-22, 1980. Contact: Office of Continuing Medical Education, Albert Einstein College of Medicine, 1300 Morris Park Avenue, Bronx, N.Y. 10461, U.S.A.

Eighth Australian Orthodontic Congress, Perth, Australia. March 23-29, 1980. Contact: Hon. Secretary, Australian Society of Orthodontists, 179 St. George's Tce. Perth, W.A. 6000, Australia.

The Bermuda Dental Association Spring Meeting, Bermudiana Hotel, Hamilton, Bermuda, March 24-25-26, 1980. Contact: The Secretary, The Bermuda Dental Association, P.O. Box 785, Hamilton 5, Bermuda. Phone: (809) 292-7676.

Tenth Asian Pacific Dental Conference, Singapore, March 26-31, 1980. Contact: Hon. Secretary, Singapore Dental Association, 4-A College Rd., Singapore 3, Republic of Singapore.

April

Latin American Confederation of Dental Prosthetics — 11th Congress, Barcelona, Spain, April, 1980. Contact: Julio Medrano Duaso, presidente, Asociacion de Protésicos Dentales de Catalunya, Avda. de Roma 2-4, Barcelona 15, Spain.

First World Biomaterials Congress, Baden, near Vienna, Austria, April 8-12, 1980. Contact: Mrs. E. Maurer, Medical Academy of Vienna, Alser Strasse 4, A-1090 Vienna, Austria.

International Congress of the Panamerican Association of Periodontology, San Juan, Puerto Rico, April 15-20, 1980. Contact: Benjamin Vargas, G.P.O. Box 70175, San Juan, Puerto Rico 00936.

Sixth Annual Meeting of the French Society of Periodontology, Monte Carlo, Monaco, April 29-May 1, 1980. Contact: Société Française de Parodontologie, 57 Rue d'Amsterdam, 75008 Paris.

May

Schweizerische Zahnärzte-Gesellschaft (SSO), Interlaken, Switzerland, May, 1980. Contact: Franz Plattner, Chefredaktor des Bulletins, Ottoplatz 21, 7000 Chur, Switzerland.

American Academy of Oral Pathology, San Antonio, Texas, U.S.A., May 12-16, 1980. Contact: Dr. Arthur Miller, School of Dentistry, Temple University, 3223 N. Broad St., Philadelphia, PA 19140, U.S.A.

Academy of Denture Prosthetics, Daytona Beach, Florida, U.S.A., May 18-23, 1980. Contact: Dr. William R. Laney, Dept. of Dentistry, Mayo Clinic, Rochester, MN 55901, U.S.A.

Tenth International Meeting on Dental Implants and Transplants, Bologna, Italy, May 23-25, 1980. Contact: Professor G. Muratori, Gruppo Italiano Studi Implantari Sezione Congressi, Via S. Gervasio 1, I-40121, Bologna, Italy.

American Academy of Pedodontics, San Francisco, California, U.S.A., May 24-27, 1980. Contact: Miss Merle C. Hunter, 211 E. Chicago Ave., Chicago, IL 60611, U.S.A.

June

Eighth International Conference on Oral Biology, Tokyo, Japan, June 1-3, 1980. Its theme will be: Oral Disease Prevention — its implications and applications. An interesting study tour program in Japan, China and Thailand is being arranged in connection with the conference. Contact: Dr. George S. Beagrie, University of British Columbia, Faculty of Dentistry, 2075 Westbrook Place, Vancouver, B.C. V6T 1W5.

The 58th General Session of the International Association for Dental Research, Royal Hotel, Osaka, Japan, June 5-8, 1980. Contact: Yojiro Kawamura, chairman I.A.D.R. Organizing Committee, School of Dentistry, Osaka University, 4-3-48 Nakanoshima, Kita-ku, Osaka, Japan.

Symposium on the Prevention in Stomatology, Dolny Kubin, Czechoslovakia, June 5-7, 1980. Contact: Prim. MUDr. V. Ťažandlák, Dúnz — Dolný Kubin, Nemocničná ul. 4, 026 14 Dolný Kubin, Czechoslovakia.

58th IADR Congress, Osaka, Japan, June 5-8, 1980. Contact: Dr. Yojiro Kawa-

mura, Osaka University Dental School, 32 Joan-cho, Kitaku, Osaka, 530 Japan.

Seventh International Conference on Oral Surgery, Trinity College, Dublin, Ireland, June 23-26, 1980. Contact: Professor I.A. Findlay, Chairman, Organizing Committee, Seventh International Conference on Oral Surgery, 12 Pembroke Park, Dublin 4, Ireland.

86th Meeting of the American Dental Society of Europe, Stratford-upon-Avon Hilton, Stratford-upon-Avon, England, June 24-28, 1980. Contact: The Secretary, Dr. Brian J. Parkins, 57 Portland Place, London W1N 3AH, England.

Fifth International Congress of Dento-Maxillo-Facial Radiology, Portland, Oregon, U.S.A., June 28-July 2, 1980. Contact: Dr. Walter H. Fox, 1400 Mill Street, Eugene, OR 97401, U.S.A.

July

British Dental Association Centenary Meeting, London, England, July 10-11, 1980. Contact: R.B. Allen, secretary, British Dental Association, 64 Wimpole Street, London W1M 8A1, England.

Fourth International Symposium on the Prevention & Detection of Cancer, Wembley Conference Centre, London, England, July 26-31, 1980. Contact: Fourth International Symposium on Prevention & Detection of Cancer, Room 1909, 375 Park Avenue, New York, N.Y. 10022, U.S.A.

August

New Zealand Dental Association Jubilee Conference 1905-1980, Dunedin, New Zealand, August 25-29, 1980. Contact: The Conference Secretary, P.O. Box 647, Dunedin, New Zealand.

Fédération Dentaire Internationale, International Dental Show, Hamburg, Germany, August 25-September 7, 1980. Contact: M. Jean-Pierre Schweizer, sales manager, Conference Travel of Canada Ltd., 11 Adelaide Street West, Suite 309, Toronto, Ont., Can., M5H 1L9.

September

Fédération Dentaire Internationale, 68th Annual World Dental Congress, Hamburg, Germany, September 2-7, 1980.

Contact: Dr. R. Braun, Bundesverband der Deutschen Zahnärzte, Universitätsstrasse 73, 5000 Köln 41, Germany.

Federation of Prosthodontic Organizations, Chicago, Illinois, U.S.A., September 15-16, 1980. Contact: Mr. Eric M. Bishop, Suite 1636, 211 East Chicago Ave., Chicago, IL 60611, U.S.A.

Genoa International Fair — 10th Exponential, Genoa, September 24-27, 1980. Contact: Fiera di Genova, P. le J.F. Kennedy, 16129 Genoa.

October

Third National Convention and III International Conference of Oral Health, Lima, Peru, October 1-4, 1980. Contact: Dr. Gilberto Dominguez, Av. Benavides 264-902, Lima 18, Peru, South America.

International College of Dentists Annual Session, New Orleans Hilton, October 8-13, 1980. The U.S.A. Section Convocation and Banquet, Saturday October 11, 1980. Reservations may be made by sending a cheque for \$25 per person to the International College of Dentists, 3138 Commodore Plaza, Miami, FL 33133, U.S.A.

1981—

Fédération Dentaire Internationale, 69TH ANNUAL WORLD DENTAL CONGRESS, Rio de Janeiro, Brazil, September 5-9, 1981.

Fédération Dentaire Internationale, 70TH ANNUAL WORLD DENTAL CONGRESS, Vienna, Austria, October 11-16, 1982.

Fédération Dentaire Internationale, 71ST ANNUAL WORLD DENTAL CONGRESS, Tokyo, Japan, October 1983.

Fédération Dentaire Internationale, 72nd Annual World Dental Congress, Helsinki, Finland, August/September, 1984.

Future meetings of the ACFD/AFDC are scheduled to take place in Montreal (1980), McGill University; Vancouver (1981), University of British Columbia; Halifax (1982), Dalhousie; Edmonton (1983), University of Alberta; and Winnipeg (1984), University of Manitoba.

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BRITISH COLUMBIA — Southern Interior. Large practice for sale with two associates (one full time, one part time), hygienist, etc. Grossing in area of \$450,000 per year. Only good management and financially minded dentists need apply. Present owner wishes to retire at age 40. Excellent terms to right party. Also, an excellent house to be considered. This is an opportunity of a lifetime. Are you wasting your time and energy trying to build a practice? Wasted time is costing you valuable income. Reply to CDA Box Number 1915.

BRITISH COLUMBIA — Vancouver Island. Located centrally in the beautiful Cowichan Valley. Three operatories all equipped; convenient layout

in modern building. Dentist retiring. For details phone: (604) 748-0832 or 746-7791 (evenings).

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ALBERTA — Central. Large preventive family practice for sale or lease. Well-established office with three operatories, central suction, nitrous oxide and air-conditioning. Present staff wishes to remain. Hospital privileges available. Excellent hunting and fishing nearby. Owner retiring because of ill health. Reply to CDA Box Number 1949.

ALBERTA — Medical Dental Centre has office space for lease in Spruce Grove (pop. 9,000), 12 miles west of Edmonton, Seven doctor clinic and pharmacy already leased. Ideal location for dentist(s). Available: Summer 1980. Reply to: Dr. Somani, Box 870, Spruce Grove, Alta. T0E 2C0. Phone: (403) 962-2606.

ALBERTA — Medicine Hat. Practice for lease: established eight year old,

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ONTARIO — Toronto. Oral surgeon with adequate training in out-patient general anaesthesia, wanted as an associate for group practice. Objective - eventual full partnership. Must have NDEB or Ontario Licence. Apply: Secretary, Oral Surgery, 168 Eglinton Avenue West, Toronto, Ont. M4R 1A7. Phone: (416) 487-5264.

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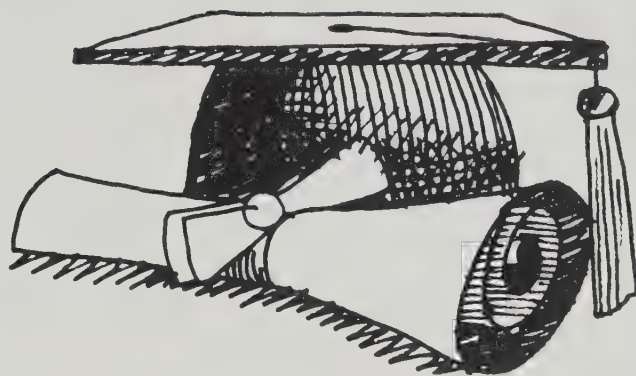
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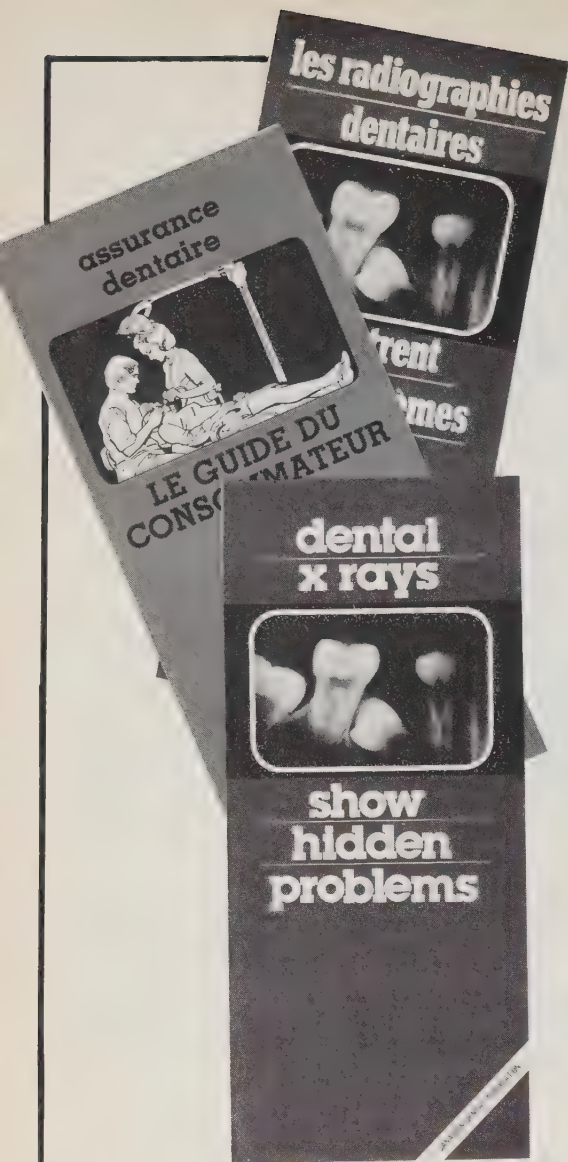
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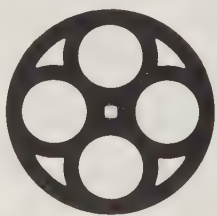
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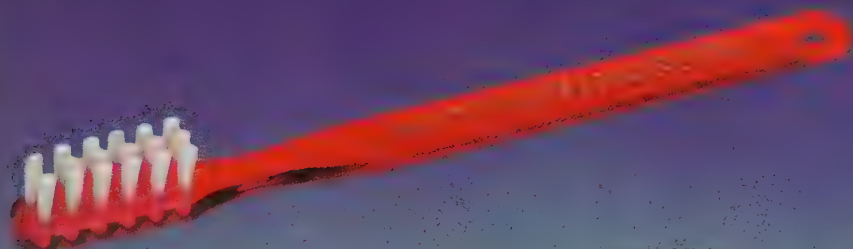
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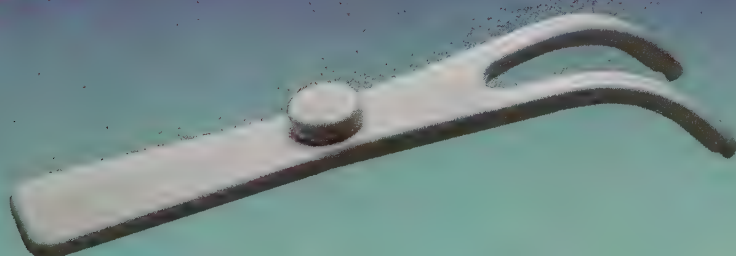
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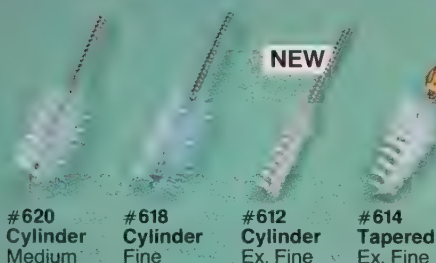


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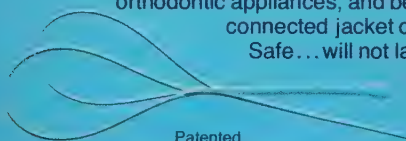
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Vol.46 No.3

Canadian
Dental Association

March
1980

Journal

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Canadienne

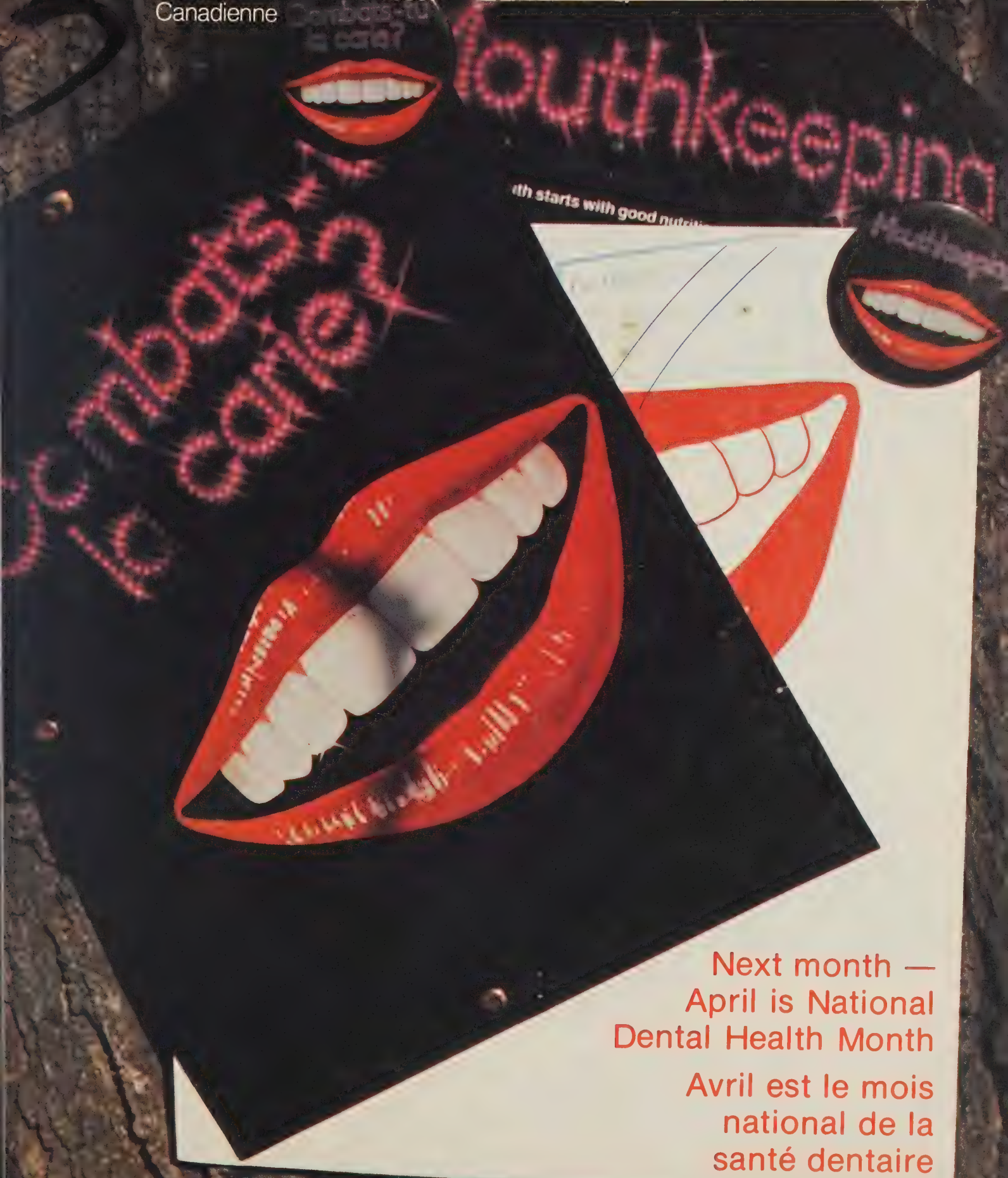
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We've come a long way together



If you were practising dentistry 100 years ago, you probably had another trade as well—anything from blacksmith to travelling salesman. Because you couldn't make a living just as a dentist.

But dentistry was changing; and if you were serious about your work you were beginning to recognize the merits of preventive dentistry...which meant teaching the public that dentistry was more than "pulling the tooth that hurts". It was about this time that the Colgate company introduced Colgate toothpaste.

As people learned that keeping teeth healthy required day-to-day care, they learned to care for them with Colgate.



By the turn of the century most dentists were no longer common tradesmen, but educated professionals; and the Canadian Dental Association was founded so they could share their skill, their knowledge and their concern for the integrity of the profession. Although more and more toothpastes were now being introduced, Colgate's reputation as an effective dentifrice was already well-established. More and more dentists were recommending Colgate to their patients.



As the century progressed, many biological and technical advances were made in the field of dentistry, one of the most significant of which was the increasing use of fluoride to reduce the incidence of cavities. The first fluorides to be used by dentists were simple in composition: sodium fluoride and stannous fluoride. But the Colgate company was developing its own improved fluoride, MFP (sodium monofluorophosphate). Research showed that this fluoride reacts with the tooth enamel to form fluorapatite*, which makes the tooth more resistant to decay. Tests also showed that staining of teeth, which can be a problem with stannous fluoride, isn't a problem with MFP. Reformulated Colgate with MFP was so effective that it was one of the first toothpastes to receive official recognition from the Canadian Dental Association†. And Colgate** with MFP is still one of the most effective toothpastes in the fight against cavities today.



*Ericsson, Y., The mechanism of the monofluorophosphate action on hydroxy apatite and dental enamel, Acta Odont, Scand., 21, 341-358 (1963).

† Colgate Toothpaste contains sodium monofluorophosphate, which is, in our opinion, an effective decay preventive agent, and is of significant value when used in a conscientiously applied program of oral hygiene and regular professional care.

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SUPPORTING: \$50 per year. These are persons having an interest in and who support CDA but do not otherwise qualify. They may become supporting members on admission by CDA Executive Council.

STUDENT: \$10 per year. For undergraduate students and graduates who have proceeded *directly* to a graduate program or internship.

Life: No fee. Eligible dentists are those who are presently members with 40 years of service to the profession or have reached the age of 65 and whose application for life membership has been approved by the CDA Executive Council.

HONORARY: No fee. A person who has rendered valuable service to the Association and has been nominated and elected to this position by the CDA Executive Council.

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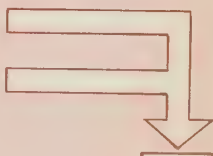
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OUI ☐

NO
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ACTIVE MEMBER

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*Beiswanger, B.B., et al.: J. Dent. Child. 45:137, 1978.



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"Good Mouthkeeping" is the slogan — better dental health is the goal

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Another CDA Convention — this time it's July in Nova Scotia

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Challenging work awaits dentists who travel north.

CAASI supports fluoridation

Fluoridation cuts the cost of dental insurance.

Fluoride report critique

Dr. Jack Hann has taken a close and critical look at "Environmental Fluoride 1977" a report by Rose and Marier.

Income high for CFDE

Dentists and hygienists donated more than \$70,000 to CFDE in 1979.

161 April is you know what!

National Dental Health Month . . . it means promoting good oral health in every Canadian province.

Membership up

CDA's membership drive in Quebec and Ontario has produced good results.

Dr. Geoffrion honored

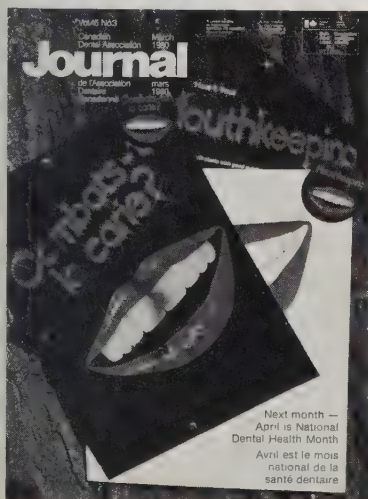
The founder of the Department of Orthodontics at the University of Montreal was guest of honor at the 58th Annual Meeting of the Northeastern Society of Orthodontists in Montreal.

162 Culture and history affects oral health

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April is
National
Dental Health
Month

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All statements of opinion and supposed fact are published on the authority of the author who submits them and do not necessarily express the views of the Canadian Dental Association, unless such statements or opinions have been adopted by the Association.

ISSN 0709-8936

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de l'Association
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Canadiennemars
1980

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Bénéficiez d'une adhésion gratuite à l'ADC.

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par rapport à l'an dernier, les contributions des hygiénistes et des dentistes se sont accrues de 15 pour cent.

Le Dr Paul Geoffrion à l'honneur

Le Dr Geoffrion était l'invité d'honneur de la 58e assemblée annuelle de la Société des orthodontistes du Nord-Est.

Campagne d'adhésion à l'ADC
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April is National Dental Health Month—a time when Canada's dental professions get together to promote good oral hygiene. The theme for this year's campaign is "Good Mouthkeeping", a message which stresses total mouth-care.

National Dental Health Month has two objectives: to publicize good dental health and to make the work of the Canadian Dental Association and the provincial associations in preventive dental health care highly visible.

The "Good Mouthkeeping" theme is not directed towards one age group, but many of the activities for National Dental Health Month are especially tailored for children and their parents. "The best offence is a good defence"—dentists recognize that good dental health habits must be firmly established early in life. National Dental Health Month is one way to show young children that good dental health can be fun.

The poster contest, a regular feature of Dental Health Month, helps children become involved in dental care. Every year thousands of students submit posters based on various dental health subjects. And so children have fun learning about good dental health habits.

Planning kits, produced by the Canadian Dental Association, assist corporate members in organizing their Dental Health Month campaign. The information is not only relevant for National Dental Health Month purposes, but can be used year-round.

Some Dental Health Month events include "Brush-Ins", dental displays and "Smile-A-Thons".

As always, Dental Health Month will be well covered by the media. Radio announcements have been sent to stations across the country. Newspaper articles prepared by the Canadian Dental Association are enclosed in the planning kits.

National Dental Health Month television commercials have been sent to television networks. The commercials appeal to children of all ages and feature Sheri Lewis and her puppet Lambchop. This is a first for CDA. Television commercials have never been included in a National Dental Health Month campaign.

Preparing for National Dental Health Month is an enormous task. The joke around my office is if you can't find me, I'm sure to be on the phone discussing National Dental Health Month!

Plans for 1980 Dental Health Month began last June when all provincial campaign chairmen met at CDA headquarters in Ottawa. At that time, the theme "Good Mouthkeeping" was approved.

In the past five years that I have been involved in National Dental Health Month, two years as British Columbia's Dental Health Month chairman and three as the National chairman, there have been many changes.

Canada's dental health profession reflects the divergent interests of this country. Each area has special needs, unique only to that region.

While National Dental Health Month has always been considered a national campaign, it has only been through the work and cooperation of CDA and the provinces in recent years that this is now the case.

Considering that National Dental Health Month has brought provincial and national associations together, to promote one common interest—good dental health—our program can only be termed a success.

Remember, April is "Good Mouthkeeping" month.

Dr. Don Scramstad
British Columbia

LE MOIS NATIONAL DE LA SANTÉ DENTAIRE

Avril est le Mois national de la santé dentaire et, pour les membres de la profession dentaire, c'est l'occasion de se rassembler pour promouvoir une bonne hygiène buccale.

Cette année, la campagne a adopté pour thème: "une bonne hygiène buccale" et elle insiste sur une hygiène intégrale de la bouche.

Les deux objectifs du Mois national de la santé dentaire sont de promouvoir une bonne santé dentaire auprès du public et de faire connaître le travail que l'Association dentaire canadienne et les associations provinciales accomplissent en médecine dentaire préventive.

Le thème de la campagne ne s'adresse pas à une seule catégorie d'âges. De fait, plusieurs manifestations du Mois national de la santé dentaire sont préparées spécialement pour les enfants et leurs parents. "Mieux vaut prévenir que guérir," dit-on. Aussi les dentistes reconnaissent-ils l'importance d'implanter très jeune de bonnes habitudes d'hygiène dentaire. Le Mois national de la santé dentaire est une façon de montrer aux enfants qu'une bonne hygiène dentaire peut être un plaisir.

Chaque année, le Mois national de la santé dentaire lance un concours d'affiches afin d'intéresser les enfants à l'hygiène dentaire. Des milliers d'enfants y participent et préparent des affiches sur différents sujets reliés à la santé dentaire. Ainsi ils s'amusent en apprenant quelles sont les bonnes habitudes qu'il faut acquérir pour avoir des dents saines.

L'Association dentaire canadienne distribue des pochettes de renseignements afin d'aider ses membres à préparer leur campagne du Mois national de la santé dentaire. Ces pochettes sont utiles non seulement durant le Mois national de la santé dentaire, mais aussi toute l'année.

Parmi les autres manifestations du Mois national de la santé, il y a des "Brush-Ins" (épreuves de brossage), des démonstrations dentaires et des "Smile-A-Thons" (des marathons du rire).

Comme toujours, le Mois national de la santé dentaire sera très bien couvert par les médias. On a fait parvenir des messages publicitaires à des postes de radio à travers

le pays. L'Association dentaire canadienne a également préparé des articles de journaux qu'elle a inclus dans ses pochettes de renseignements.

En outre, des messages publicitaires ont été envoyés à des réseaux de télévision. Conçus pour plaire aux enfants de tout âge, ils mettent en vedette Sheri Lewis et sa marionnette Lambchop. Il s'agit d'une première pour l'ADC, car jamais auparavant on a eu recours aux messages télévisés durant les campagnes du Mois national de la santé dentaire.

Préparer le Mois national de la santé dentaire est une énorme tâche. Au bureau, on plaisante en disant que, si je suis introuvable, je suis sûrement au téléphone en train de discuter du Mois national de la santé dentaire.

Les préparatifs pour le Mois national de la santé dentaire cette année ont commencé en juin dernier, quand tous les présidents provinciaux de la campagne se sont réunis au siège national de l'ADC, à Ottawa. C'est alors que le thème: "une bonne hygiène buccale" a été adopté.

Au cours des cinq dernières années, j'ai participé au Mois national de la santé dentaire, deux années comme président de la Colombie Britannique et trois années comme président national. Durant ce temps, il y a eu de nombreux changements.

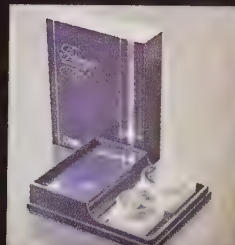
La profession dentaire canadienne reflète les intérêts divergents de notre pays. Chaque région a des besoins particuliers, spécifiques à elle seule.

Le Mois national de la santé dentaire a toujours été considéré comme une campagne nationale, mais c'est grâce aux efforts et à la coopération de l'ADC et des provinces au cours des dernières années si c'est maintenant une réalité.

Si l'on considère que le Mois national de la santé dentaire a uni les associations nationale et provinciales dans un intérêt commun — promouvoir une bonne santé dentaire —, il faut reconnaître que notre activité est un succès.

N'oubliez pas, il faut avoir "une bonne hygiène buccale" en avril.

Dr Don Scramstad,
Colombie Britannique.



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to be accompanied by gastric upset.

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TYLENOL*
tablets
with Codeine No. 1

300 mg acetaminophen; 8 mg codeine phosphate; 15 mg caffeine.

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TYLENOL*

tablets
with Codeine No. 1



TYLENOL Tablets with Codeine — Acetaminophen — Codeine — Caffeine
ACTIONS

Acetaminophen is an analgesic and antipyretic; codeine is an analgesic and antitussive.

INDICATIONS

TYLENOL Tablets with Codeine No. 1 is indicated for the relief of mild to moderate pain. Also as an analgesic-antipyretic — antitussive in the symptomatic treatment of colds.

CONTRAINDICATIONS

Hypersensitivity to codeine or acetaminophen.

PRECAUTIONS

Codeine Phosphate

The use of codeine phosphate over a prolonged period may lead to drug dependence. Warn patients against driving or operating machinery if they show impaired mental and/or physical abilities while taking codeine. Caution should be exercised and dosage may need to be reduced when codeine is administered with other drugs which depress the CNS (including alcohol), other narcotic analgesics, phenothiazines, other tranquilizers, sedative-hypnotics, tricyclic antidepressants, and MAO inhibitors. When used postoperatively in sedated or debilitated patients, or in patients with chronic obstructive pulmonary disease, indiscriminate use may precipitate respiratory insufficiency resulting in part from increased viscosity of bronchial secretions and the retention of secretions due to suppression of the cough reflex.

Acetaminophen

Patients who have ingested a single massive overdose of acetaminophen are at risk for hepatotoxicity. Clinical evidence of hepatotoxicity may be delayed up to one week. Close clinical monitoring and serial hepatic enzyme determinations are, therefore, recommended. Acetaminophen toxicity may be enhanced by recent barbiturate ingestion.

ADVERSE EFFECTS

Codeine Phosphate

The most frequently observed adverse reactions to codeine phosphate include lightheadedness, dizziness, sedation, nausea and vomiting. These effects seem to be more prominent in ambulatory than in nonambulatory patients and some of these adverse reactions may be alleviated if the patient lies down. Other adverse effects include euphoria, dysphoria, constipation and pruritus. Respiratory depression is seen in higher dosage.

Acetaminophen

The incidence of gastrointestinal upset is less than after salicylate administration. If a rare hypersensitivity reaction occurs, discontinue the drug. Hypersensitivity is manifested by rash or urticaria. Regular use of acetaminophen has shown to produce a slight increase in prothrombin time in patients receiving oral anticoagulants, but the clinical significance of this effect is not clear.

OVERDOSE

Codeine Phosphate

SYMPTOMS: Codeine phosphate in sufficient overdosage produces narcosis, sometimes preceded by a feeling of exhilaration and followed by convulsions. Nausea and vomiting are usually prominent symptoms. The pupils are contracted and the pulse rate is usually increased. Cardiorespiratory depression accompanied by cyanosis occurs, followed by a fall in body temperature, circulatory collapse, coma and death.

TREATMENT: Maintain a patent airway through the use of an oropharyngeal airway or endotracheal tube. Oxygen should be administered, and respiration should be assisted by artificial respiration. A specific antagonist such as naloxone should be administered immediately.

Gastric lavage or induction of emesis with syrup of ipecac should be carried out immediately, followed by administration of activated charcoal. Circulatory collapse and shock may be counteracted by use of dextran, plasma, or concentrated albumin and vasopressor drugs, e.g. norepinephrine. Short-acting barbiturates, e.g. thiopental may be used cautiously to control convulsions. Avoid the use of analeptic drugs.

Acetaminophen

SYMPTOMS: Patients who have ingested 10 g or more of acetaminophen as a single massive overdose are at risk for hepatotoxicity. The clinical course of acetaminophen overdose occurs in a three-phase sequential pattern. The patient may be asymptomatic during the early phases.

Therefore, in cases of suspected acetaminophen overdose, begin specific antidotal therapy as soon as possible.
Phase 1: The first phase begins shortly after ingestion of a potentially toxic overdose and lasts for 12 to 24 hours. The patient may manifest signs of gastrointestinal irritability, nausea, vomiting, anorexia, diaphoresis and pallor.

Phase 2: If toxicity ensues, there is a latent phase of 24 to 48 hours but it may last as long as four days. The earlier symptoms abate and the patient may feel well. During this interval, hepatic enzymes, serum bilirubin and prothrombin time begin to rise as hepatic necrosis progresses. Right upper quadrant pain may develop as the liver becomes enlarged and tender. The vast majority of cases do not progress beyond this phase and their subsequent clinical course is characterized by a gradual return of liver function tests to normal.

Phase 3: For the relatively few patients who develop significant hepatic necrosis, the signs and symptoms of the third phase of the clinical course depend on the severity of hepatic damage, and usually occur from three to five days following ingestion. Symptoms may be limited to anorexia, nausea, general malaise and abdominal pain in less severe cases or may progress to confusion, stupor and hepatic necrotic sequelae including jaundice, coagulation defects, hypoglycemia and encephalopathy as well as renal failure and myocardiopathy. Death, when it occurs, is due to hepatic failure.

TREATMENT: Estimate as carefully as possible the quantity of acetaminophen ingested and the time of ingestion. The stomach should be emptied promptly by gastric lavage or by induction of emesis with syrup of ipecac. Activated charcoal will interfere with the absorption of the antidote. If activated charcoal has been administered, lavage before initiating treatment with the antidote. Regardless of the quantity of acetaminophen reported to have been ingested, immediately administer N-acetylcysteine orally if 24 hours or less have elapsed since alleged time of ingestion of acetaminophen. Draw blood for acetaminophen assay, liver function tests, and other clinical laboratory tests. Maintain supportive treatment throughout.

The use of N-acetylcysteine as an antidote in acetaminophen overdose is experimental. More detailed information on the treatment of acetaminophen overdose, including the availability of N-acetylcysteine, the preparation of N-acetylcysteine for administration of an antidote, recommended dosage regimen and acetaminophen assay methods is available from McNeil Laboratories (Canada) Limited, 600 Main St. West, Stouffville, Ontario or a Poison Control Centre.

ADULT DOSAGE

1 or 2 tablets every 4 hours as required.

SUPPLIED

Each round, white tablet, uncoated with slightly beveled edges and imprinted "MCNEIL" on one side and "1" on the reverse side contains: 300 mg acetaminophen, 15 mg caffeine, and 8 mg codeine phosphate. Available in bottles of 30 and 100 tablets.

REFERENCES

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Letters

Correction...

I was pleased to read the article in the December issue of the Journal referring to my appointment as Lieutenant-Governor of Prince Edward Island.

May I point out an error which I am certain was inadvertently printed. The line reading that I was past President of the Canadian Dental Association should have read: *past President of the Dental Association of Prince Edward Island.*

Dr. J.A. Doiron,
Prince Edward Island.

Lettres

On rectifie une erreur

J'ai lu avec plaisir l'article du Journal de décembre au sujet de ma nomination comme Lieutenant-Gouverneur de l'Île-du-Prince-Édouard.

J'attire votre attention sur une erreur qui, j'en suis sûr, s'est glissée par mégarde dans vos lignes. Là où il est dit que j'ai été un ancien président de l'Association dentaire canadienne, on aurait dû lire: *ancien président de l'Association dentaire de l'Île-du-Prince-Édouard.*

Dr J.A. Doiron,
Île-du-Prince-Édouard

Le Journal de l'Association Dentaire Canadienne est heureux d'offrir cet espace aux lecteurs désireux d'envoyer des "Lettres à la rédaction". Toutes les lettres doivent être signées et la rédactrice en chef se réserve le droit de les raccourcir si le manque d'espace l'impose.

Societies/ Sociétés

Canadian Association of Orthodontists . . . 1980 Annual Meeting and Scientific Sessions will be held in Halifax, Nova Scotia, July 13 to 16 at the Chateau Halifax. Convention chairman is Dr. Wayne Barro, 599 Portland Street, Dartmouth, Nova Scotia, V2W 2M5. Telephone (902) 434-2177.

Newfoundland Dental Association . . . executive members include: Dr. Gerald McFarlane, president; Dr. Robert Furlong, past president; Dr. Richard Seipp, first vice president; Dr. Gary MacDonald, second vice president; Dr. Gordon Anthony, secretary; Dr. Robin Gamble, treasurer. Members of the Board are: Dr. Charles Daly, chairman; Dr. Kevin Walsh, vice chairman; Dr. Reginald Ball, member; Dr. Bruce Bowden, registrar; and Dr. Lorne Klippert (Deputy Minister of Health), ex-officio member.

A two-day Continuing Education Course in Endodontics was held in Corner Brook February 22 and 23.

Manitoba Dental Association . . . Dr. Harold Diamond was installed recently as 56th president of the MDA. A 1963 graduate of the University of Manitoba Faculty of Dentistry, Dr. Diamond is a past president of the Winnipeg Dental Society. He has served on the Peer Review Committee, Children's Dental Health Plan Committee and the Public Relations Committee of the Manitoba Dental Association. He has been on the Board of the MDA since 1976 and was vice president in 1979. Other members of the Manitoba Dental Association Board of Directors are: Dr. Walker Shortill, Dr. Robert Baker, Dr. Ussher Claman and Dr. Gene Solmundson, all of Winnipeg; Dr. Carl Enns, Portage la Prairie; Dr. Vern Rosnoski, Russell; Marg Miller, Auxiliaries representative and David Snitka,

Dauphin, representative of the Minister of Health.

Essex County Dental Association . . . Spring Seminar. "The Esthetic Approach to Restorative Dentistry," a two-day seminar with Dr. Ronald Goldstein, will be held Saturday and Sunday, April 12 and 13 at Cleary Auditorium, Riverside Drive East, Windsor, Ontario. Tuition, including luncheon and coffee, is \$125. For more information contact Dr. Donna Brode, 3075 Forest Glade Drive, Windsor, Ontario.

Ontario Society for Preventive Dentistry . . . is sponsoring an "International Symposium — Don't Just Survive — Thrive in the '80's," June 20 to 22 in Toronto, Ontario. For further information contact Dr. Bill Armstrong, P.O. Box 419, Aliston, Ontario.

Northeastern Society of Orthodontists . . . recently honored Dr. Paul Geoffrion of Montreal, Quebec (*see In the News and Les Actualités*).

British Dental Association . . . Centenary Celebrations will take place July 10 and 11 at Royal Festival Hall, London, England. Closing date for registration is May 31.

Academy of General Dentistry . . . will sponsor a workshop to train dental practitioners to prepare and present continuing dental education courses. The workshop, scheduled for April 17 to 19, will be conducted by Dr. Robert Rasmussen, assistant professor, Louisiana State University School of Dentistry. Registration information is available from: Continuing Education Department, AGD, 211 East Chicago Avenue, Number 1244, Chicago, Illinois 60611.

The 28th Annual Meeting of the Academy of General Dentistry will take place in San Diego, California, June 28 to July 2. Dr. John Coady, executive director of the American Dental Association will be the keynote speaker at the opening session of the meeting — "Mission for the '80s: excellence through education."

FLUORINSE*

Sodium fluoride rinse

Composition: Contains sodium fluoride in a pleasantly flavoured neutral pH liquid. Contains alcohol (3% by volume).

Indications: Dental caries prophylactic.

Precautions: Limited to topical use in the mouth only. DO NOT SWALLOW. Excessive ingestion may cause nausea and excessive use may cause dental fluorosis.

Contraindications: Sodium-free diets.

Dosage and Administration: 1 to 2 teaspoons (5 to 10 ml) of Fluorinse is swished around vigorously in the mouth for approximately 1 minute and then expectorated. Recommended at bedtime, after brushing and flossing teeth thoroughly. For maximum benefit, patient should not eat or drink for a period of 30 minutes after rinsing.

How supplied: Fluorinse is available in 455 ml plastic bottles with child-resistant caps.

Weekly Rinse	Daily Rinse	Weekly Rinse
Cinnamon (red) 0.2% sodium fluoride	Ice Mint (blue) 0.05% sodium fluoride	Mint (green) 0.2% sodium fluoride

Caution: Keep out of reach of children.

FLOZENGES*

Sodium fluoride lozenges

Composition: Contains sodium fluoride in lozenge form. Contains no sugar, saccharin or cyclamate.

Indications: To help protect against dental caries, particularly for children through age 14.

Precautions: If this product is used in an area where the drinking water has a natural fluoride content in excess of 0.7 parts of fluoride ion per million parts of water, or is artificially fluoridated, fluorosis of the tooth enamel may result.

Contraindications: Sodium-free diets.

Dosage and Administration: FOR CHILDREN OVER 3 YEARS OF AGE: 1 lozenge daily, preferably at bedtime after brushing and flossing teeth thoroughly. Flozenge is slowly sucked and dissolved in the mouth. FOR CHILDREN 2 TO 3 YEARS OF AGE: 1 lozenge every other day, as above.

Fluoride in drinking water	Recommended supplement	
	Children 2-3	Children 3 & over
0-0.3 ppm	0.5 mg	1.0 mg
0.3-0.7 ppm	0.25 mg	0.5 mg

How supplied: Flozenges are available in plastic, child-resistant containers of 120 lozenges.

Two flavours:	Orange	Strawberry
	0.5 mg of fluoride ion	1.0 mg. of fluoride ion

Caution: Keep out of reach of children. Exceeding recommended dosage over a prolonged period of time may be harmful.

References

- † According to the International Workshop on Fluorides and Dental Caries Reductions, School of Dentistry, University of Maryland, 1974; "...concentration of recommendable rinsing solutions ranges from 0.025% to 0.2%." (Page 140). Many available rinses do not meet this standard.
1. Confirmed by world-wide dental authorities (International Workshop, Maryland, 1974).
2. Stephen KW. Campbell D: Caries reduction and cost benefit after 3 years of sucking fluoride tablets daily at school. *Brit. dent. J.* April 1978, 144-202.

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From now on, your patients can continue an effective caries prevention program between appointments.¹ Fluorinse is especially valuable for:

- Children who are decay prone or who have insufficient fluoride intake.
- Caries rampant adults.
- Adults or children with poor dental hygiene habits or without access to regular dental care.
- Orthodontic and periodontic patients.

A choice of flavours and strengths.

Fluorinse is available in 0.2% Cinnamon (red) for weekly use; 0.05% Ice Mint (blue) for daily use; and 0.2% Mint (green) for weekly use.

For children who do not like to rinse, Flozenges are a good alternative.

Flozenges are pleasant to take, and effectively reduce the incidence of caries.² They are available in two flavours: Orange (0.5 mg. of fluoride ion) and Strawberry (1 mg of fluoride ion).

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N.W.T. requires dentists urgently

"There is an acute shortage of dentists in the Northwest Territories", according to Canadian Dental Association president Dr. Clyde Covit.

Dr. Covit called the work interesting and a challenge. It gives the dental practitioner an opportunity to work closely with the native population, he said.

Both full time and part time positions are available in the N.W.T. which, for dental and medical services, is divided into four zones, Inuvik, Mackenzie, Keewatin and Baffin.

Short-term coverage is required in many areas and the federal government is prepared to hire dentists

for a minimum of two weeks at any one time.

For further information relating to salary scales and other benefits including housing, leave, and isolation allowances, please contact: Dr. J.D. Martin, regional director, N.W.T. Region, Medical Services, Health and Welfare Canada, Jeanne Mance Bldg., Room 1962, Tunney's Pasture, Ottawa, Ontario. K1A 0L3.

Fluoride Report Critique

"The authors have concentrated on the length of their bibliography rather than the caliber of the studies referenced," said Dr. Jack Hann, Regional dental consultant with the Ministry of Health, Nanaimo, British Columbia, in his critique of research published under the title "Environmental Fluoride 1977" by Dyson Rose and John Marier.

"Studies are cited with little critical analysis (and) deficient or questionable investigations are used as evidence," he continued.

Because the Rose and Marier work was published by the Environmental Secretariat for the Associate Committee on Scientific Criteria for Environmental Quality of the National Research Council of Canada, many people began to doubt the safety of fluoridation.

Dr. Hann's critique was completed at the request of the Canadian Dental Association.

The premise of the Rose and Marier 1977 report is that a potential hazard to human health exists from the cumulative effect fluoride ingestion from multiple sources including air, water and food.

According to Dr. Hann, the authors' claim was no more valid in 1977 than it was in their analysis conducted six years earlier. The first Rose and Marier monograph "Fluoridation and Cancer," published in 1971, was reviewed by Dr. Ralph Burgess who, even at that time, rejected most of the authors' claims. Dr. Hann's objective, on behalf of CDA, was to determine the adequacy of both the research and analysis that lead to the Rose and Marier conclusions of 1977. Rose and Marier are not medical scientists or physiologists, said Dr. Hann.

"The fact they do not have a medical background does not necessarily diminish the quality of their research work (but) it might explain a tendency to extrapolate too easily the findings of 'in vitro' studies to the level of expected outcomes in human physiological behaviour."

Because the work "Environmental Fluoride 1977" has not been widely reported in scientific journals, it has not been subjected to critical appraisal essential for credibility in scientific circles, said Dr. Hann.

Editor's note: Copies of Dr. Hann's critique are available from the Canadian Dental Association.

Fluoridation support

A resolution in support of fluoridation was passed recently by the Executive Committee of the Canadian Association of Accident and Sickness Insurers (CAASI).

In its unanimous action, CAASI stated fluoridation of community water supplies has been proven to substantially reduce the incidence of dental caries. The Association indicated it has spoken in support of fluoridation because it is a national organization interested in the improved health of Canadians.

The explanation was that insurance companies are aware that fluoridation can reduce dental care expense and consequently reduce the cost of dental insurance.

Dental care benefits are currently provided to Canadians by more than 30 companies in the Association which represents 83 insurers in the health care field.

Income high for CFDE

Canadian Fund for Dental Education chairman, Dr. James Guest, recently reported personal gifts from dentists and dental hygienists reached a record high in 1979 with a total of \$70,660 in donations from these two groups. The figure represents an increase of 15 per cent over 1978 totals.

The Fund also received more than \$80,000 from business and industry.

"These record contributions pushed our 1979 income to well over \$200,000," Dr. Guest said.



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But eventually, maybe not today, but certainly soon, you're going to have to rely on other people to deliver the goods for you. That's why we want you and your staff to talk to the Ash Temple rep. You'll find he's been in and out of dental offices for a long time. He knows what makes a good office a better office. A good dentist, an efficient dentist. You'll find he'll be delighted to pass on to you some of the things he has seen and knows. Things that can certainly save time and probably a little aggravation.

Things like, how much product you should have on hand for your practice so that you never run out. What equipment you should trade in, or new equipment you should buy. We think you will also find that he's pretty knowledgeable about new products coming on the market, a new technology, or a new technique in dentistry. Talk to him.

You see, our reps are not just suppliers to the dental industry – they're in the industry.

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We know what goes
into helping dentists.

April is you know what!

The theme for National Dental Health Month is "Good Mouth-keeping" and this year's chairman is Dr. Don Scramstad.

Each April the Canadian and provincial dental associations work to promote good dental health in this campaign.

This year, posters, calendars, flyers and buttons carry the "Good Mouthkeeping" message. Radio and television announcements encourage Canadians to brush and floss teeth properly, eat nutritious foods, avoid sweet snacks and visit a dentist regularly. Newspaper articles prepared by the Canadian Dental Association are distributed across Canada.

Three children will win bicycles in the poster contest held annually during National Dental Health Month. Children from three age groups, seven and under, eight and nine and 10 to 12 years, qualify for the contest. Judging first takes place on a provincial level and winning posters are mailed to the Canadian Dental Association for the national competition.

Provincial chairmen throughout Canada sponsor promotional activities stressing good dental health. People of all ages participate, but the emphasis is on encouraging children to develop good dental health habits.

Dentists can participate in National Dental Health Month by contacting the Canadian Dental Association, their provincial dental associations or local dental societies.

Membership up

In its first independent campaign, the Canadian Dental Association

reports the number of CDA memberships in the provinces of Ontario and Quebec has increased over last year.

"Unofficial figures show we are moving over the top," said Hubert Drouin, executive director. "We are going into the 80's with renewed enthusiasm and drive emphasizing that CDA is a truly national organization," he said.

Acting on behalf of dentists across Canada, CDA is the voice of dentistry at the federal government level. Work from Councils and Committees is carried on by more than 20 full-time staff members in Ottawa.

One of the most visible benefits of membership in CDA is the insurance and pension package.

The Journal of the Canadian Dental Association offers dentists the opportunity to exchange professional viewpoints with their colleagues across the country and to read the most up-to-date, original scientific material.

"In many areas — accreditation, insurance, tax, communication, education — the Canadian Dental Association is meeting the challenges of the future," Drouin concluded.

~ CDA — it's your future.

CDA membership for students

Students graduating in dentistry this year should take note of the Canadian Dental Association's offer, for new graduates, of free membership in CDA from the date of graduation to December 31, 1980. This offer is available to students who are members in good standing of CDA.

The CDA membership fee is collected in various ways from province to province. In most provinces, upon date of graduation, students are invoiced by their provincial associa-

tion for licensing fees, provincial membership fees and CDA's membership fee. New graduates must apply in writing to the Office of Student Affairs of the Canadian Dental Association, indicating name, address, year and faculty of graduation and the province where they have paid their fees. After verification and payment by the provincial association, CDA will reimburse students for their half-year CDA membership fees.

In Quebec and Ontario, where CDA membership is voluntary, new graduates will not be invoiced for the half-year membership fees. All new graduates, who are members in good standing of CDA (or CDA/ODA) will automatically be considered paid and active members of CDA and receive all benefits until December 31 of that year.

For further information contact the student representative at your faculty of dentistry.

Dr. Geoffrion honored

Dr. Paul Geoffrion, founder of the Department of Orthodontics at the Université de Montréal, was honored recently by orthodontists from all over the world.

The occasion was the 58th Annual Meeting of the Northeastern Society of Orthodontists in Montreal. The international gathering was also dedicated to American orthodontist, Dr. Robert Strong.

The Northeastern Society is the largest constituent of the American Association of Orthodontists. The Quebec Association of Orthodontists under the presidency of Dr. Jean Marc Fortin, is a component of the Northeastern Society.

Montreal dentist, Dr. Frank Shamy, presented Dr. Geoffrion with a commemorative plaque at a special ceremony attended by 450 orthodontists.

Culture and history affects oral health

Over the past year, Canada has experienced an influx of immigrants from Southeast Asia. Their poor dental status is the result of a combination of nutritional deficiencies, lack of recent dental attention and negligible oral hygiene. Rampant decay is frequently observed in the children and a significant proportion of the adult population exhibits both dental caries and periodontal disease. This article is written to better acquaint dental personnel with the nutrition and oral hygiene habits of these refugees.

Traditionally, Southeast Asians follow a semi-vegetarian diet, low in animal protein, low in fat and high in carbohydrates (mainly of a starchy nature). Staples of the diet include rice, fish, lean pork, chicken, vegetables and fresh fruit when available. Rice has suffered the same fate as North American rice — mechanical polishing and loss of the Vitamin B complex. In this diet, protein is obtained from fish and legumes, with small amounts of animal protein taken from pork and chicken. Soybean is a significant contributor of protein and calcium. Eggs are not readily available. Local fruits, the primary source of Vitamin C, are usually exported and, when available, are very expensive. Vitamin C intake is marginal. Maximum retention of nutrients from vegetables and unripe fruits, which are sometimes used as vegetables, is ensured by the cooking methods of simmering, stir frying and steaming. Coconut and peanut oils, as well as fat derived from pork used in food preparation provide six per cent of total calories and meet essential fatty acid requirements.

A prevalent deficiency in the enzyme lactase, essential for milk digestion, necessitates a relatively dairy free diet. Dairy products such as butter and cheese are noticeably absent and even popular french bread is a milk free product. The milk consumed is usually sweetened canned milk.

Because of its high osmolality, it is emptied more slowly by the stomach and may not as readily produce the symptoms (abdominal pain, flatulence and diarrhea) of lactose intolerance. This developed sweet taste explains the current southeast Asian habit of adding sugar to milk. In their homeland, Vitamin D deficiency has not been a problem. Calcium is probably the most recognizable deficiency in the Southeast Asian diet. Sugar is used in cooking, much like a seasoning, to heighten and distinguish flavors. NUOC MAM, a fish sauce, is the liquid extracted by fermenting whole fish with salt. Fish sauce is used extensively and contributes protein, iodine and fluoride to the diet. Teas, also add to the fluoride intake. Other beverages with a significant sugar content include lemonade, sweetened soft drinks and juices and sugar-cane juice.

...another oral hygiene substitute is charcoal...

Oral hygiene is taught to the young children by their parents and later reinforced in school. Toothbrushes (A Chinese invention) are common and affordable by all. The term floss is not used, but Chinese silk or strands of hair is used to dislodge food.

Traditional methods of oral hygiene are practised in the country. The fibrous peel of the areca (betel) nut is rubbed over the gums and teeth two or three times a week. Its fibrous qualities probably aid in cleaning, but assumed whitening qualities are unfounded. Another oral hygiene substitute is charcoal wood used in place of toothpaste. It is rubbed over the teeth and then the mouth is rinsed with water. Older Southeast Asians (50 to 60 years of age), rely on chewing a mixture of betel

leaves and nuts and limestone. They believe this practice stimulates the declining saliva flow and is a good exercise for the periodontium. They also hold the misconception that the calcium content from the limestone has beneficial effects on the teeth. People living close to the sea will use sea salt to brush and clean their teeth instead of pastes.

Abusive eating habits of western society were introduced by American soldiers to the Vietnamese and spread to neighbouring countries such as Cambodia and Laos during the Vietnam War. Chocolate bars, candies, chewing gum and fruit canned in sugar syrup were accepted into the diet. Cigarettes were also available in abundance and used by children and adults, increasing the need for Vitamin C which was already limited in the diet.

Current food shortages and rationing in Southeast Asia are contributing to widespread malnutrition. A monthly ration consists of 13 kilograms per person per month which provides 1,500 kilo-calories per day largely in the form of carbohydrate foods. The ration consists of one kilogram rice, three kilograms flour, nine packages of noodles, ½ kilogram of meat or fish, small amounts of sugar (½ kilogram every two months) and one kilogram skim milk powder per month. The 1,500 kilocalories falls short of the FAO (Food and Agri-

cultural Organization) recommendation of 2,100 kilocalories per day. Besides being calorically inadequate, insufficient amounts of protein, fat and most vitamins and minerals are available in the Southeast Asian diet. Many food products, such as pineapples, vegetables, fish and poultry which could alleviate the present grim nutritional situation are being exported or sold on the open market at inflated prices. Incomes as low as \$2.50(US), the price of 1 kg. of meat or fish, are not uncommon.

There are private dentists for the privileged classes and preventive checkups and radiographs are available. Others seek dental care only when needed. From public dentists in hospitals and dispensaries. Treatment is paid for by the government. Crown and bridge work in the adult population is often inadequate by North American standards.

Over the past year, both diet and oral hygiene have severely declined. Some emigrants lived on boats for periods from four days to one month. Little food was taken for the expected four to five day trip. Foods easily obtainable, easy to carry, with maximum storage qualities and of high energy value (i.e. dry bread, rice cakes and sugar) were chosen. Lemons provided additional fluid and/or Vitamin C. Water was rationed to approximately 10 millilitres twice a day. Many Cambodians have spent eight to nine months travelling through tropical forests, foraging for food.

Those seeking refuge in the Hong Kong camps could work and supplement food supplies from markets. However, refugees in Thai and Malaysian camps were supplied solely by the United Nations and other organizations. Many people arriving in the camps were suffering from moderate to severe malnutrition. Cases of Marasmus (protein/calorie malnutrition), Kwashiorkor (calorie malnutrition) and Pellegra (Vitamin B deficiency) were seen. Although the food supply provided adequate nutrition, it also included cariogenic items such as sugar powdered drinks. In adequate supplies of water often made it necessary for these powders to be eaten dry. Emphasis placed on immediate survival relegated daily routines,

including oral hygiene, to a low priority. This, compounded by lack of toothbrushes, led to severe dental problems. The shortage of dentists in the camps necessitated treatment of abscesses only by physicians. Encampment periods varied depending on education and skills.

When Southeast Asians present for dental treatment, many problems must be considered. They are arriving in a highly stressful state with limited language facility. They have left a homeland that emphasizes ancestor worship and the family unit to face an unknown future in a different culture. They are arriving in a nutritionally compromised condition to unfamiliar food and a diet dependant on a food group (milk) they may not be able to tolerate. Particular attention should focus on the possibility of deficiencies in Vitamin C, D and Calcium. They are arriving with indeterminant dental caries and periodontal problems due to unavoidable neglect, sucrose consumption and lack of comprehensive dental attention.

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Many thanks to Dr. G. Edlist, Chief of Anaesthesia, Mount Sinai Hospital, Toronto, Dr. J. Keystone, Director of Tropical Medicine, Toronto General Hospital, Toronto, Mr. Guy Ouellet, Assistant Representative for the Canadian U.N. High Commissioner, Mr. Tony Falsetto, Indo-Chinese Refugee Task Force for Canadian Employment and Immigration, Ms. Sharon Russo, Project 4000 and members of the Southeast Asian population for their assistance and information.

The above article was prepared by Marlene Wyatt, R.P.Dt. and Dale Scanlan, R.D.H., Children's Hospital of Eastern Ontario, Ottawa.

Faculties/ Facultés

Université Laval . . . Depuis septembre dernier, le Dr Marc-A. Morand est chef de la section en Endodontie à l'Université Laval, suite à l'obtention d'une maîtrise en Endodontie (MScD) à l'Université de Boston.

British Columbia . . . The official opening of the Acute Care Hospital at the University of British Columbia is scheduled to take place next month. Two beds will be available to Dentistry . . . Planned modifications to the Dental Department of the Extended Care Unit are almost complete. Dr. A.E. Swanson has been appointed head of the Department of Oral and Maxillofacial Surgery. A Charter Fellow of the Royal College of Dentists of Canada, Dr. Swanson obtained his Master's degree from the University of Michigan in 1956. He graduated from the University of Toronto in 1949. Dr. Swanson was president of the British Columbia Dental Association (1967-1968), president of the Canadian Society of Oral Surgeons (1971-1972) and president of the Interspecialty Dental Society of British Columbia (1975-1975).

Future meetings of the ACFD/AFDC are scheduled to take place in Montreal (1980), McGill University; Vancouver (1981), University of British Columbia; Halifax (1982), Dalhousie; Edmonton (1983), University of Alberta; and Winnipeg (1984), University of Manitoba.

Introducing a new standard for mouthwashes.

Now there's a wealth of clinical evidence that fluoride mouthwash can significantly reduce caries.

The Research

After reviewing more than 20 independent studies, the International Workshop on Fluorides and Dental Caries Reduction* concluded that fluoride mouthwashes (1) can significantly reduce caries experiences in both fluoridated and non-fluoridated communities (2) may be used in combination with other topically applied fluoride preventive measures (3) appear to be more effective with increased frequency of use and (4) are safe from age 6.

Furthermore, findings from the Workshop indicated that no fluoride solution was more caries-inhibiting than neutral sodium fluoride.

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New Listermint with Fluoride is a pleasant-tasting neutral pH mouthwash containing 0.22 mg/ml of sodium fluoride (100 ppm fluoride ion). This concentration of fluoride ion was tested in some of the studies reviewed by the Maryland Workshop, and, the Health Protection Branch has approved the brand's New Drug Submission, which provided evidence that 100 ppm fluoride ion (as found in Listermint with Fluoride) is an effective level for caries reduction. We hope you and your patients will take the opportunity to confirm the conclusions of the Maryland Workshop with our new product.



*April 28th to May 1st, 1974. Co-sponsored by Department of Pedodontics, University of Maryland and by the Division of Dentistry, U.S. Department of Health, Education and Welfare. For a complete report on proceedings, write to Medical Department, Warner-Lambert (Canada) Limited, 2200 Eglinton Ave. East, Scarborough, Ontario M1K 5C9.

Learn and relax in Halifax...

"Learn and Relax in Halifax" is the theme for the CDA National Convention to be held in Halifax, July 13 to 16. Co-chairman of the event are Dr. John Christie and Dr. Terry Ingham. A large turnout is expected for this combination convention and "down-east" family holiday.

Social program

The social program includes a chowder party at Sunday night's Opening Session and a lobster party at Halifax's new Metro Centre. Luncheons are planned for Monday and Tuesday and a casual Beef-n'-Beer for all is scheduled for Wednesday noon. A sail on the Schooner Bluenose II and a harbour tour are among the extra attractions.

Spouses' program

The Spouses' Program, chaired by Jean Dexter and Pat Bonang, includes displays and sales of local crafts, a luncheon and fashion show on Monday and a choice of bus tours to other parts of the province on Tuesday.

Scientific

The Scientific Program includes presentations by Dr. Ted Oldenburg, pedodontist, University of North Carolina; Dean Bentley, oral surgeon, McGill University; and Dr. Esther Wilkins, periodontist, Tufts University. Dr. A.L. Posen will present the Grieve Memorial Lecture. Clinicians from Dalhousie University and their topics include: Dr. Ron Bannerman, operative; Dr. Tom Larder, endodontics; Dr. Noel Andrews, periodontics;

Dr. Bob Hoar, diagnosis; Dr. Vern Shaffner, fixed prosthodontics; Dr. Bruce Graham, removable prosthodontics, Dr. Derek Jones, dental materials; and Dr. David Precious, oral surgery.

Organizing Committee

The organizing committee includes: Dr. George Clark — Accommodation; Suzanne Mader — Dental Assistants; Kim McGrail — Dental Hygienists; Dr. Joe Elias — Exhibitors; Dr. Phil Amys — Information & Public Relations; Dr. Carl Dexter — Protocol; Dr. David Precious — Scientific chairman; Drs. Elaine Gordon and Ralph Conter — Social; Jean

Dexter and Pat Bonang — Spouses' Program; Dr. Art Ervin — Table Clinics; and Dr. Cliff Murray — Transportation.

Continuing Education in Dentistry, Dalhousie University, is looking after registration services and the scientific sessions.

The Canadian Dental Nurses & Assistants Association and the Canadian Dental Hygienists Association are planning meetings in conjunction with the Canadian Dental Association Convention. They will take in some of the sessions planned for dentists and they have arranged activities specifically for their own interests.

The Arts Centre, Dalhousie University, will be the site for all presentations, the exhibits and the student table clinics.

Details of the Convention will appear in future issues of the Journal.

Further Information

Detailed information about the 1980 Convention will appear in future issues of the Journal.

Registration forms are on pages 214 and 216.



Dr. Terry Ingham

Rendez-vous à Halifax en juillet

"Learn and Relax in Halifax" (Instruisez-vous et détendez-vous à Halifax), tel est le thème du Congrès national de l'ADC qui se tiendra à Halifax, du 13 au 16 juillet 1980, et auquel vous invitent ses coprésidents, les Drs John Christie et Terry Ingham. On prévoit qu'un très grand nombre de personnes participeront à ce congrès et s'offriront par la même occasion des vacances familiales dans l'Est.

Au programme des activités sociales, on a inscrit une dégustation de soupes aux poissons lors de la séance d'ouverture du dimanche soir et un dîner de homard au nouveau Centre Métro d'Halifax. Un déjeuner sera servi les lundi et mardi et, le mercredi, il y aura une fête 'Beef 'n Beer' de caractère folklorique. Parmi les autres divertissements, il y aura une excursion sur le voilier Bluenose II et une visite du port.

Le programme des conjoints, préparé par Jean Dexter et Pat Bonang, comprendra des expositions et des ventes d'objets fabriqués par les artisans locaux, un déjeuner et un défilé de mode le lundi et, le mardi, un choix de visites guidées dans différentes parties de la province.

Au programme scientifique sont prévues plusieurs conférences dont certaines seront données par le Dr Ted Oldenburg, dentiste pour enfants de l'Université de la Caroline du Nord, par le Dr Dean Bentley, chirurgien buccal de l'Université McGill, et par le Dr Esther Wilkins, spécialiste en parodontologie de l'Université Tufts. Le Dr A.L. Posen prononcera la conférence à la mémoire du Dr Grieve. Il y aura également des cliniciens affectés à différentes spécialités et venant de l'Université Dalhousie. Ainsi le Dr Ron Bannerman parlera de médecine

opératoire; le Dr Tom Larder, d'endodontie; le Dr Noel Andrews, de parodontologie; le Dr Bob Hoar, de diagnostics; le Dr Vern Shaffner, de prothèses fixes; le Dr Bruce Graham, de prothèses mobiles; le Dr Derek Jones, de matériaux dentaires; et le Dr David Precious, de chirurgie buccale.



Dr. John Christie

Le Comité organisateur se compose comme suit: le Dr George Clark, affecté à l'hébergement; Suzanne Mader, chargée des Assistants dentaires; Kim McGrail, chargée des Hygiénistes dentaires; le Dr Joe Elias, chargé des exposants; le Dr Phil Amys, affecté aux renseignements et aux relations publiques; le Dr Carl Dexter, chargé des affaires protocolaires; le Dr David Precious, président du comité scientifique; les Drs Elaine Gordon et Ralph Conter, chargés des affaires sociales; Jean Dexter et Pat Bonang, chargées du programme des con-

joint; le Dr Art Ervin, chargé des conférences cliniques; et le Dr Cliff Murray, chargé du transport.

L'Ecole supérieure de dentisterie de l'Université Dalhousie s'occupe des inscriptions et des séances scientifiques.

Dans le cadre de ce congrès, l'Association canadienne des Gardes-Malades et des Assistants dentaires et l'Association canadienne des Hygiénistes dentaires tiendront également des assemblées. Leurs membres se joindront aux dentistes pour certaines conférences, mais ils auront aussi des activités préparées spécialement à leur intention.

Toutes les manifestations auront lieu au Centre des Arts de l'Université Dalhousie. C'est là également que seront les exposants et que se donneront les conférences cliniques pour les étudiants.

Dans les prochains numéros du Journal, on trouvera d'autres renseignements sur le Congrès.

Renseignements

D'autres renseignements sur le congrès de 1980 paraîtront dans les prochains numéros du Journal.

On trouvera des formulaires d'inscription aux pages 214 et 216.

La santé dentaire

Le thème du Mois national de la santé dentaire est "une bonne hygiène buccale" et, cette année, le président de la campagne est le Dr Don Scramstad.

Chaque avril, les associations dentaires nationale et provinciales travaillent à promouvoir une bonne santé dentaire durant cette campagne.

Cette année, des affiches, des calendriers, des prospectus et des macarons invitent les gens à avoir "une bonne hygiène buccale". Des messages publicitaires seront diffusés à la radio et à la télévision pour encourager les Canadiens à se brosser les dents, à faire usage de la soie dentaire, à consommer des aliments sains, à éviter les sucreries et à visiter le dentiste régulièrement. Des articles de journaux sont préparés par l'Association dentaire canadienne et distribués dans tout le pays.

Trois enfants gagneront chacun une bicyclette dans le concours d'affiches qui est lancé chaque année lors du Mois national de la santé dentaire. Les enfants de trois catégories d'âges, soit de sept ans et moins, de huit à neuf ans et de 10 à 12 ans, peuvent participer à ce concours. Une première sélection se fait au niveau provincial, puis les affiches gagnantes sont envoyées à l'Association dentaire canadienne pour le concours national.

Les présidents des provinces canadiennes parrainent des manifestations destinées à promouvoir une bonne santé dentaire. Des personnes de tout âge prennent part à ces manifestations, mais on s'adresse surtout aux enfants afin de les encourager à prendre de bonnes habitudes d'hygiène dentaire.

Les dentistes peuvent participer au Mois national de la santé den-

taire en communiquant avec l'Association dentaire canadienne, leur association dentaire provinciale ou la société dentaire de leur localité.

Dr Geoffrion à l'honneur

Le Dr Paul Geoffrion, fondateur de Département d'orthodontie de l'Université de Montréal, a été honoré récemment par des orthodontistes du monde entier.

L'événement a eu lieu dans le cadre de la 58ième Assemblée annuelle de la Northeastern Society of Orthodontists, à Montréal. La rencontre honorait également le Dr Robert Strong, orthodontiste américain.

Des sociétés qui composent l'Association américaine des orthodontistes, la Northeastern Society est la plus importante. L'Association des orthodontistes du Québec en fait partie et son président est le Dr Jean-Marc Fortin.

Le Dr Frank Shamy, dentiste montréalais, a présenté au Dr Geoffrion une plaque commémorative lors d'une cérémonie spéciale qui groupait 450 orthodontistes.

Campagne d'adhésion à l'ADC

Au cours de sa première campagne autonome pour recruter des membres, l'Association dentaire canadienne est heureuse d'annoncer que les demandes d'adhésion venant des provinces de l'Ontario et du Québec se sont accrues par rapport à l'an dernier.

"D'après les premières statistiques, il appert qu'il y a une augmentation marquée du nombre d'adhésions," a déclaré le directeur général, M.

Hubert Drouin. "Nous abordons les années '80 avec une confiance et un enthousiasme renouvelés, assuré que l'ADC est vraiment une organisation nationale."

Agissant au nom de tous les dentistes du Canada, l'ADC représente la médecine dentaire auprès du gouvernement fédéral. Plus de 20 personnes travaillant à temps complet composent le personnel qui s'occupe des divers Conseils et Comités à Ottawa.

Un des avantages les plus évidents qu'obtiennent les membres de l'ADC, c'est le régime d'assurance et de retraite.

Le Journal de l'Association dentaire canadienne offre aux dentistes un moyen d'échanger des observations professionnelles avec leurs collègues à travers tout le pays et de se renseigner sur des sujets scientifiques récents et originaux.

"Dans plusieurs domaines comme par exemple, l'agrégation, l'assurance, l'impôt, les communications et l'éducation, l'Association dentaire canadienne relève les défis de l'avenir," M. Drouin a-t-il dit pour conclure.

Oui, l'ADC s'occupe de votre avenir!

Revenu élevé pour le FCED

Le président du Fonds canadien pour l'enseignement dentaire, le Dr James Guest, a récemment annoncé que des dons personnels faits par des dentistes et des hygiénistes dentaires ont atteint, pour l'année 1979, la somme record de \$70,660. Ce chiffre représente une augmentation de 15 pour cent par rapport aux sommes recueillies en 1978.

De plus, le Fonds a reçu plus de \$80,000 de firmes commerciales et industrielles.

"Grâce à ces contributions record, notre revenu dépasse de beaucoup les \$200,000," a déclaré le Dr Guest.

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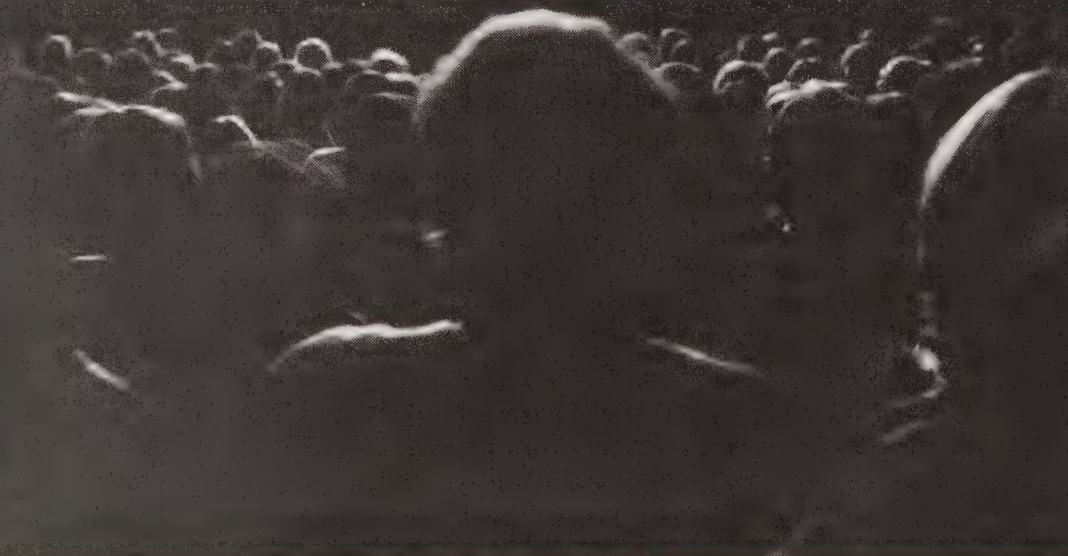
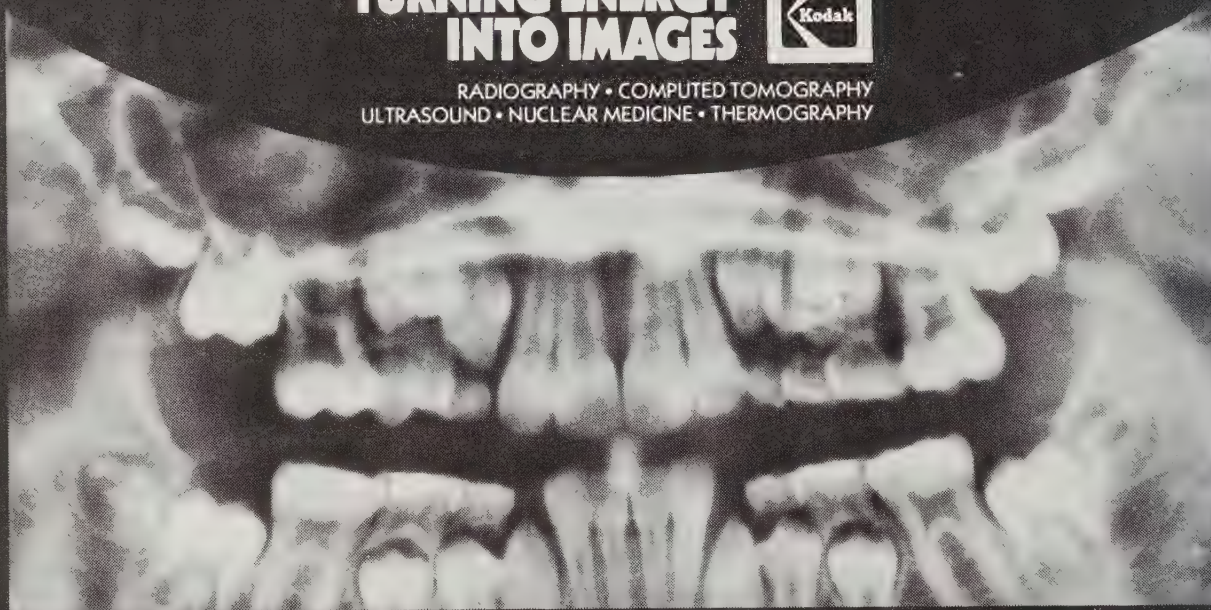
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Critique...

"Les auteurs de cet ouvrage se sont plus souciés de la longueur de la bibliographie que de la qualité de leurs sources de référence." Ainsi s'est exprimé le Dr Jack Hann, conseiller dentaire du Ministère de la Santé, à Nanaïmo, en Colombie Britannique, dans un compte rendu sur l'étude préparée par Dyson Rose et John Marier et parue sous le titre suivant: "Environmental Fluoride 1977" (Le Fluor dans l'environnement — 1977).

Les sources sont citées avec peu d'esprit critique," a-t-il ajouté, et "des enquêtes incomplètes ou douteuses sont utilisées comme des preuves."

Parce que l'ouvrage de Rose et Marier a été publié par le Secrétariat de l'Environnement pour le Comité associé sur les critères scientifiques concernant l'état de l'environnement, du Conseil national de Recherches du Canada, plusieurs personnes se sont demandé si la fluoration ne présente pas des dangers.

C'est à la demande de l'Association dentaire canadienne que le Dr Hann a fait un compte rendu de cet ouvrage.

Dans leur rapport, Rose et Marier posent pour principe que le fluor provenant de sources multiples, y compris l'air, l'eau et la nourriture, s'accumule dans l'organisme et peut nuire à la santé.

Selon le Dr Hann, les allégations de Rose et Marier n'étaient pas plus valables en 1977 qu'elles ne l'étaient six années plus tôt. Le Dr Burgess a donné un compte rendu de cette première monographie intitulée "Fluoridation and Cancer" (Fluorisation et cancer) et publiée en 1971 et, même alors, lui aussi a rejeté les

allégations de Rose et Marier. Au nom de l'ADC, le Dr. Hann a voulu déterminer la valeur des recherches et des analyses qui ont amené Rose et Marier à tirer de pareilles conclusions sur la fluoration en 1977. Or, il appert que Rose et Marier ne sont ni des experts médicaux, ni des physiologistes.

"Le fait qu'ils n'ont aucun antécédent médical ne diminue par nécessairement la valeur de leurs recherches," a poursuivi le Dr Hann, (mais) "il peut expliquer pourquoi on tend à croire trop facilement que les découvertes faites à partir d'expériences 'in vitro' ont les mêmes effets sur l'organisme humain."

Pour conclure, le Dr Hann a dit que l'ouvrage, parce qu'il n'a pas fait l'objet de plusieurs comptes rendus dans les revues scientifiques, n'a pas été soumis à une appréciation critique, épreuve nécessaire pour assurer sa crédibilité dans les milieux savants.

En faveur de la fluoration

Dernièrement, le Comité exécutif de l'Association canadienne des compagnies d'assurance-accident et maladie (the Canadian Association of Accident and Sickness Insurers — CAASI) a passé une résolution en faveur de la fluoration.

D'un mouvement unanime, la CAASI a déclaré que la preuve a été faite à l'effet que la fluoration des eaux potables d'une communauté réduit l'incidence de la carie dentaire. L'Association a révélé qu'elle s'est prononcée en faveur de la fluoration parce qu'elle est un organisme national intéressé à ce que la santé des Canadiens s'améliore.

Les compagnies d'assurance, a-t-on expliqué, savent que la fluoration peut réduire le coût des soins dentaires et, par conséquent, celui des assurances dentaires.

Adhésion étudiante à l'ADC

Etudiants en médecine dentaire qui serez diplômés cette année, l'Association dentaire canadienne vous offre une adhésion gratuite à l'ADC à compter du moment où vous recevrez votre diplôme jusqu'au 31 décembre 1980. Seuls les étudiants qui sont membres en règle de l'ADC peuvent se prévaloir de cette offre.

Les frais d'adhésion à l'ADC sont perçus différemment d'une province à l'autre. Dans la plupart des provinces, les associations dentaires envoient aux nouveaux diplômés des formulaires pour qu'ils acquittent leurs frais de permis et leurs frais d'adhésion à leur association provinciale ainsi qu'à l'Association dentaire canadienne. Pour être remboursés, les nouveaux diplômés doivent écrire au Bureau des Affaires étudiantes de l'ADC en indiquant leurs nom et adresse, l'année et la faculté où ils ont obtenu leur diplôme, et la province dans laquelle ils ont acquitté leurs frais. Lorsque leur dossier aura été vérifié et que l'association provinciale aura effectué le paiement, l'ADC remboursera les étudiants de leurs frais pour une adhésion de six mois à l'ADC.

Au Québec et en Ontario où l'adhésion à l'ADC est libre, on n'invitera pas les nouveaux diplômés à se joindre à l'ADC pour le reste de l'année en cours. Par ailleurs, tous ceux qui sont membres en règle de l'ADC (ou de l'ADC/ADO) seront automatiquement considérés comme des membres actifs de l'ADC ayant acquitté leurs frais et ils auront droit à tous les privilèges offerts par l'Association jusqu'au 31 décembre de l'année en cours.

Pour de plus amples renseignements, communiquez avec le représentant des étudiants de votre faculté dentaire.

La santé dentaire des réfugiés

Marlene Wyatt, R.P. et Dale Scanlan, R.D.H., Hôpital Pour Enfants de l'Est de l'Ontario.

En 1979, un flot d'émigrés du Sud-Est Asiatique sont venus au Canada. Leur mauvaise santé dentaire résulte d'une combinaison de facteurs, tels un régime alimentaire déficient, un manque de soins dentaires récents et une hygiène buccale négligée. Les enfants ont souvent de nombreuses caries et une bonne partie de la population adulte est affligée de caries et de maladies parodontaires. Cet article est écrit pour mieux renseigner les membres de la profession dentaire sur le régime alimentaire et les habitudes d'hygiène buccale de ces réfugiés.

Traditionnellement, les Asiatiques du Sud-Est suivent un régime semi-végétarien comprenant peu de protéines animales, peu de gras et beaucoup d'hydrates de carbone (surtout celles de la nature des féculents). Les principaux aliments sont le riz, le poisson, le porc maigre, le poulet, des légumes et des fruits frais lorsqu'il y en a. Le riz subit le même traitement que le riz de l'Amérique du Nord: le polissage mécanique lui fait perdre les vitamines du complexe B. Dans ce régime, les protéines proviennent principalement du poisson et des légumineuses. Des protéines animales sont fournies par le porc et le poulet, mais en petite quantité. La fève soya est une importante source de protéines et de calcium. Il n'est pas toujours facile de se procurer des oeufs. Les fruits locaux constituent la principale source de vitamine C, mais on les réserve habituellement pour l'exportation ou, si on peut s'en procurer, ils sont très chers. On consomme donc très peu de vitamine C. Les légumes et les fruits verts, servis parfois comme légumes, sont cuits à feu lent, à grande friture ou à la vapeur, ce qui retient au maximum leurs éléments nutritifs. Les huiles d'arachide et de noix de coco, de

même que le gras de porc utilisé dans la préparation des aliments, fournissent six pour cent du total des calories et satisfont aux besoins essentiels de l'organisme en acides gras.

Une déficience marquée en lactase, enzyme essentielle pour assurer la digestion du lait, interdit pour ainsi dire sa consommation. Aussi les produits laitiers comme le beurre et le fromage ne font-ils pas partie du régime habituel. Même le pain français, si populaire qu'il soit, ne contient pas de lait. Le lait utilisé est un lait de conserve sucré. Comme ce lait ne s'assimile pas aisément, il passe plus lentement de l'estomac dans l'intestin et, partant, n'est pas sujet à causer les symptômes dus à l'intolérance au lactose, à savoir les douleurs abdominales, la flatulence et la diarrhée. Les Asiatiques du Sud-Est ont développé un goût pour les saveurs sucrées et c'est pourquoi ils ont l'habitude d'édulcorer leur lait. Dans leur pays, ils ne souffrent pas d'une carence en vitamines D. Par contre, leur régime manque de calcium et c'est là probablement sa déficience la plus remarquable. Pour cuire, on utilise du sucre un peu à la manière d'un condiment afin d'obtenir des saveurs plus prononcées. Le NUOC MAM, une sauce à base de poisson, est un liquide qu'on obtient en faisant fermenter un poisson entier avec du sel. On consomme beaucoup de cette sauce qui contient des protéines, de l'iode et du fluor. Les thés ajoutent également à la consommation de fluor. D'autres boissons contenant une quantité assez importante de sucre sont la limonade, le jus de canne à sucre, les liqueurs douces et les jus sucrés.

Les parents à la maison et, plus tard, les professeurs à l'école initient les enfants à une bonne hygiène buccale. Les brosses à dents sont d'un usage courant et tous peuvent s'en procurer. Pour déloger des particules de nourriture entre les dents, on utilise non pas la soie floche, mais

la soie chinoise ou des brins de cheveu.

Plusieurs habitudes d'hygiène buccale sont pratiquées à travers le pays. Deux ou trois fois par semaine, les gens massent leurs dents et leurs gencives avec la peau fibreuse de la noix d'arec. Ces fibres aident probablement à nettoyer les dents, mais c'est à tort qu'on leur attribue des propriétés de blanchiment. Une autre habitude hygiénique consiste à utiliser du charbon de bois au lieu de pâte dentifrice. On s'en frotte les dents, puis on se rince la bouche à l'eau. Les Asiatiques du Sud-Est plus âgés (entre 50 et 60 ans) mâchent du bétel, un masticatoire composé de feuilles de bétel, de noix d'arec et de pierre calcaire. Ils croient que cette pratique active la production déclinante de la salive et constitue un bon exercice du parodonte. De plus, ils pensent, mais à tort, que le calcium contenu dans la pierre calcaire exerce un effet bénéfique sur la dentition. Quant aux gens qui vivent près de la mer, ils utilisent du sel marin au lieu de dentifrice pour se brosser et se nettoyer les dents.

Les soldats américains ont inculqué aux Vietnamiens plusieurs mauvaises habitudes alimentaires des sociétés occidentales et, durant la Guerre du Vietnam, ces habitudes se sont répandues dans les pays voisins, tels le Cambodge et le Laos. Au régime habituel, on a ajouté du chocolat, des bonbons, de la gomme à mâcher et des fruits macérés dans du sirop. Par ailleurs, l'usage de la cigarette s'est répandu rapidement: enfants et adultes se sont mis à fumer, augmentant ainsi leurs besoins de vitamines C. Or cette vitamine fait déjà défaut dans leur régime.

Les disettes et les rationnements fréquents contribuent à la malnutrition générale. Chaque personne consomme par mois environ 13 kilogrammes de nourriture, ce qui équivaut à 1,500 kilocalories par jour provenant pour la plus grande part d'hydrates de carbone. Une personne

reçoit chaque mois un kilo de riz, trois kilos de farine de blé, neuf paquets de nouilles, un demi kilo de viande ou de poisson, un peu de sucre (environ un quart de kilo) et un kilo de lait en poudre. Les 1,500 kilocalories de ce régime sont en deçà des 2,100 kilocalories quotidiennes recommandées par la FAO (Food and Agricultural Organization). Outre qu'il est inadéquat au point de vue calorique, le régime des Asiatiques du Sud-Est ne contient pas assez de protéines et de gras.

"Les réserves d'eau étant souvent inadéquates..."

Pareillement, la plupart des vitamines et des minéraux y sont en quantité insuffisante. Plusieurs aliments comme les ananas, les légumes, le poisson et le poulet pourraient aider à corriger ce pauvre état de fait, mais ils sont exportés ou vendus sur le marché à des prix exagérés. Or il n'est pas rare de voir des salaires mensuels aussi bas que \$2.50 (US), soit le coût d'un kilo de viande ou de poisson.

Pour les classes privilégiées, il y a des dentistes privés chez qui il est possible de subir un examen préventif et d'obtenir des radiographies. Les autres font appel aux services des dentistes publics qui sont dans les hôpitaux ou dans les dispensaires, mais quand c'est nécessaire seulement. Les soins sont payés par le gouvernement. Les couronnes et les bridges que portent les adultes sont souvent inadéquats selon les normes nord-américaines.

Au cours de la dernière année, le régime alimentaire et l'hygiène buccale ont considérablement souffert. Quelques émigrants ont dû vivre sur des bateaux pour des périodes allant de quatre jours à un mois. Comme ils prévoyaient que le voyage durerait quatre ou cinq jours, ils prenaient peu de nourriture avec eux. Ils emportaient des aliments faciles à se procurer, faciles à porter, pouvant bien se conserver longtemps et contenant une grande valeur énergétique (i.e. du pain sec, des gâteaux de riz et du sucre). A cela, ils ajoutaient des citrons pour avoir une source additionnelle de liquide aussi bien que de vitamines C. La ration d'eau était d'environ 10 millilitres deux fois par jour. Plusieurs Cambodgiens ont passé de huit à neuf mois à voyager dans les forêts tropicales, cherchant de la nourriture.

Ceux qui ont cherché refuge dans les camps de Hong Kong ont pu trouver du travail et acheter des vivres au marché. Cependant, les réfugiés des camps thaï et malais ont été ravitaillés uniquement par les Nations Unies et d'autres organisations. Beaucoup d'entre eux sont arrivés dans un état de malnutrition ou modéré ou grave. On a vu des cas de marasme (carence en protéines et en calories), de kwashiorkor (carence en calories) et de pellagre (carence en vitamines B). Bien que l'approvisionnement ait été suffisant, il comprenait des aliments cariogènes, telles les boissons à base de poudres sucrées. Les réserves d'eau étant souvent inadéquates, on consommait ces poudres sèches. Comme il s'agissait de survivre, on accordait peu d'importance aux soins quotidiens, y compris l'hygiène buccale. Tout cela, plus le manque de brosses à dents, a amené de graves problèmes dentaires. Enfin, la pénurie de dentistes dans les camps obligeait les médecins à soigner les abcès. Le temps passé dans ces camps variait selon l'éducation et les talents des sujets.

Lorsque les Asiatiques du Sud-Est réclament des soins dentaires, plusieurs problèmes sont à considérer. D'abord, ils arrivent dans un état de très grand stress et ils ont de la difficulté à s'exprimer. De plus, ils ont quitté une patrie qui a le culte des ancêtres et qui met l'accent sur la famille, pour envisager un avenir inconnu dans un pays d'une culture différente. Par ailleurs, leur système digestif, déjà affaibli, doit s'habituer à de nouveaux aliments et à un régime dans lequel il entre beaucoup de lait et qu'ils ne pourront peut-être pas tolérer. Enfin, il faut accorder une attention particulière aux carences possibles en vitamines C et D et en calcium. Les réfugiés sont affligés de caries dentaires et de problèmes parodontaires dus à des négligences inévitables, à une forte consommation de saccharoses et à un manque général de soins dentaires.

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Nous tenons à remercier le Dr G. Edlist, directeur de l'anesthésie à l'hôpital Mount Sinai de Toronto; le Dr J. Keystone, directeur de médecine tropicale à l'hôpital Général de Toronto; M. Guy Ouellet, représentant adjoint du Haut-Commissaire canadien aux Nations Unies; M. Tony Falsetto, affecté à l'accueil des réfugiés indo-chinois pour Emploi et Immigration Canada; Mlle Sharon Russo du Projet 4000 et des membres de la population du Sud-Est asiatique pour nous avoir prêté leur concours et fourni des renseignements.

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Dr. Mervyn Rogers

History of McGill Dental School

McGill University Press, 1980

The individuals and events that helped shape Canada's dental profession are the subject of Dr. Mervyn Rogers' book, "History of McGill Dental School."

The book, due to be published this spring, celebrates the 75th anniversary of McGill's Faculty of Dentistry which was in 1979.

The book is of interest to all McGill graduates and faculty members as well as those persons interested in the development of Canada's dental profession.

Rogers provides a background of dentistry and its upward struggle for recognition as an integral part of the healing sciences. He points out that medicine and surgery had, in previous centuries, to fight against similar resistance in establishing their own principles and standards.

Many of the pioneers of Canada's dental profession are referred to in Rogers' text.

Rogers makes special mention of those persons who had outstanding dental careers in different periods throughout the school's history. One of the first graduates from McGill University was Dr. George L. Cameron, who received many honors in his career and became Deputy Director General of Dental Services at National Defense Headquarters in Ottawa. Rogers recognizes such individuals as teachers and supporters of Canada's dental profession.

A chapter "Deans Over the Years" lists and acknowledges all the past deans at McGill's dental school.

Under Dr. Alexander Thornton's direction, McGill's Dental Executive of the Faculty of Medicine became the Faculty of Dentistry in 1920 and Thornton became the school's first dean.

Another past McGill dean was Dr. Arthur Walsh. The author credits Walsh as the main force behind the creation of the Council on Education of the CDA and a member of the first survey team to visit dental schools for the CDA.

Rogers devotes a chapter to Dr. Gordon Leahy, of McGill's

dental clinic. The chapter, titled "The Unforgettable Dr. Leahy", narrates this person's thirty-two year career at McGill where he eventually became Clinical Director.

"History of McGill Dental School" gives a comprehensive look at the Faculty and at some of the first McGill graduating students whose knowledge and hard work contributed towards the dental field in Canada becoming a highly respected health science.

Stanley S.K. Seah

Health Guide for Travellers to Warm Climates

The Canadian Public Health Association
The Canadian Society for Tropical Medicine and International Health
2nd edition, 1979

This health guide is certainly 'the' book for anyone contemplating travel in a hot climate. Many illnesses experienced by travellers in these countries would never have happened at some simply precautions been taken. The guide is designed to acquaint you with the precautions that you need to take before you leave home to ensure that you will stay healthy and fit during your travels. Other sections include: Adaptations to Warm Environments, Prevention

of Diseases that Are Spread by Food and Water, Common Medical Problems that you may Encounter, Preparing your Medical Kit.

Of particular interest is the table showing what immunizations are needed for any part of the world and whether or not malaria is present there.

This book will be useful to tourists, business people, missionaries — in short, to anyone planning to visit or live in a warm climate.

"Health Guide for Travellers to Warm Climates" was reviewed by Elaine Weslely, C.D.A., executive director, Canadian Dental Nurses and Assistants' Association.

Direct impression technique Sealing prepared apical foramen

William H. Christie, DMD, MS, FRCD(C)
Marshall D. Peikoff, DMD, MScD, FRCD(C)
Winnipeg, Manitoba

In another article, the rationale and method of the tapered preparation for cleaning and shaping a root canal system was discussed.¹ Once a canal has been instrumented by this technique, some differences in the method of filling a tapered canal are required. The purpose of this paper is to present the rationale and methods which are required for sealing a canal which has been prepared using the tapered preparation.

The tapered preparation, as opposed to the standardized methods of root canal preparation, differed somewhat in the sizes and usage of root canal instruments as well as the degree of taper put into the prepared canal. Serial filing attempted to produce a cleaned canal which was one of an even, gradual, and continuous taper. The smallest diameter was at the prepared and shaped apical foramen, gradually enlarging similar to the root canal taper and curvature, and ending with its largest diameter at the access opening. The apical foramen area was rounded and enlarged only slightly, or to a minimal diameter, by using precurved files which, because they are smaller, are more flexible instruments. Therefore, there was less likelihood of shifting the position of the apical foramen or of tearing the apical cementum. Rotary gates-glidden burs were used, in sequence, in the

straighter coronal half of the canal. Flushing with the bacteriocidal sodium hypochlorite solution aided in the removal of debris from the canal. The coronal and apical preparations were then joined by a sequential filing procedure whereby a series of files were set intentionally 1 mm shorter, until a more uniform, even taper was achieved (Fig 1).

The success of any root canal filling depends largely on the care placed in preparation. A well cleaned canal should result in a well obturated root canal. If care has been taken to instrument the canal so that ledges, grooves, constrictions and other irregularities are removed, then the following method will aid in forming a seal not only in the apical foramen but through the entire root canal system. The completeness of the seal of a root canal adds to the durability and longevity of the treatment.

HISTORICAL REVIEW

Materials and techniques used to obturate a root canal are legend. Methods vary from one area to another. The technique that will be described for filling the prepared and tapered canal with gutta percha has its precursors in many earlier techniques.

The Johnston-Callahan technique of diffusion was described over 50 years ago.²⁻³ It relied, perhaps fallaciously, on a sequence of chemicals which were supposed to diffuse throughout the dentinal tubules and lateral canals, as well as along the main canal. It has been found that mechanical enlarging of the canal is more effective, that the chloroform-rosin and gutta percha filling did not seal as completely as expected and that the dentine of the treated teeth became excessively brittle. However the chloroform-rosin solution

SOMMAIRE

Dans un article paru antérieurement, on a discuté le principe et la technique de préparation taillée en cône servant au nettoyage et à l'alésage du canal en thérapeutique radiculaire. Lorsqu'un canal est traité de cette façon, son obturation doit se faire selon une méthode particulière. C'est cette méthode d'obturation pour les canaux traités selon la technique de préparation taillée en cône qui est exposée dans cet article.

may have an application to our technique.²

The standardization technique of filling root canals with laterally condensed gutta percha points has been described in principle by Ingle,⁴ and this technique has been described in detail in the **Journal of the Canadian Dental Association**.⁵ Standardization has done much in making the instrument sizes more uniform between manufacturers but the technique relies upon making a slightly tapered cylindrical canal space the same size as standardized size gutta percha points. In other words, it prepares the hole to fit the point, rather than adapting the point to fit the prepared apical canal. The more a canal is curved, the more difficult it is to make its cross-sectional shape round.⁶ Since subsequent lateral points are fitted approximately to the coronal half of the canal only, the apical half of the canal still relies mainly upon a soluble sealer to fill in voids and irregularities in the canal shape.

Anatomy studies of filled canals

Numerous studies have recently demonstrated the complexity in fully sealing a root canal system.⁷⁻⁹ These studies are often extensions of internal canal anatomy studies. Larter, Prescott and Brayton⁷ used a chloropercha material, similar to that advocated by Nygaard-Östby,¹⁰ as one of the filling materials. The other two filling techniques compared were vertical condensation and lateral condensation. The former was judged

to duplicate the internal shape of the prepared canal more accurately. Therefore, it appears the same method of making an internal impression would help enhance the adaption and subsequent seal in the apical region of the canal.

There is also a high frequency of lateral canals found in all regions of the root canal system. These lateral canals are formed when nutrient vessels are entrapped in the developing Hertwig's root sheath. Their size can vary from a few micron (capillary size) to some that may be as large as the apical foramen. There is no fixed pattern to their size, location or direction.¹¹ If a lateral canal is not sealed at least with cement and it occurs in conjunction with an inadequately cleaned and poorly obturated main canal, a portal of bacterial egress may result just as readily as a poorly sealed apical foramen. As many as one out of three root canals can have one or more lateral and accessory canals. Therefore, our filling technique for the main canal should also attempt to seal out these numerous lateral canals¹² (**Fig 2 and 3**).

However, since the apical foramen is ultimately the focus of attempts at sealing a canal, the position of the end of the filling material should be discussed. The terminus of our filling is determined by the calculation of the working length of the canal during instrumentation. To seal out any void spaces in the canal, the filling material should end here also. This point was then determined by deciding whether the root canal system still



Figure 1A

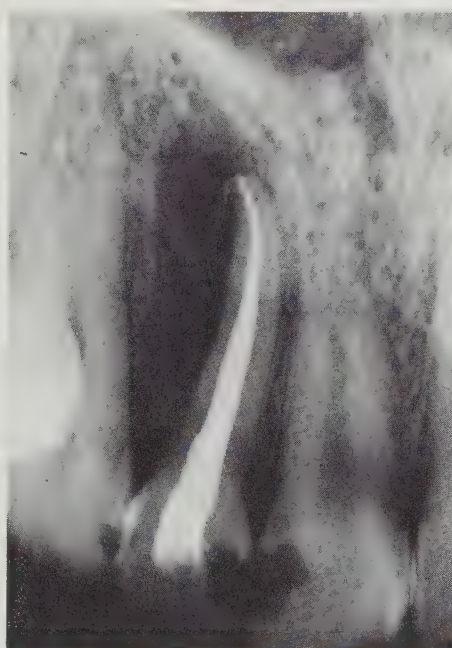


Figure 1B

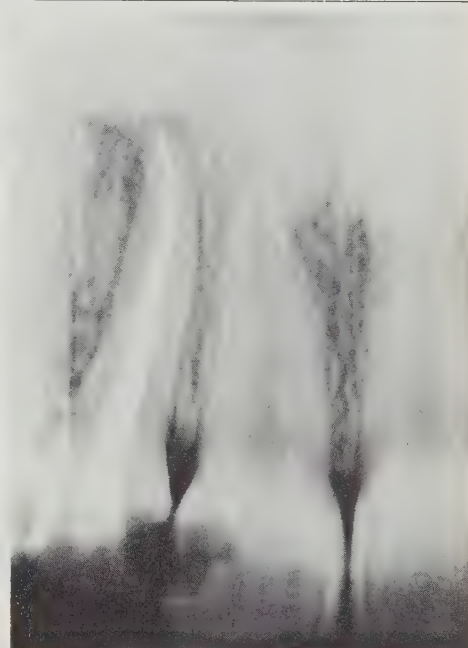


Figure 1C

Fig 1 The tapered preparation in a curved canal: (A) A normally developed root such as this curved lateral incisor has a small apical foramen. The canal is usually a gradual, but irregular, curve to the pulp chamber. (B) If a curved root is reamed to a No. 60 reamer size, as may occur in the standardized preparation, the apex will often be torn. The so-called "zip" at the foramen cannot be sealed because of a constriction at a point referred to as the "elbow." Voids may be left along the wall of the preparation. (C) The tapered preparation leaves the apical foramen smaller and in its original location. A "stepping-back" of instrument sizes also helps to eliminate unwanted constrictions. Gates-glidden burs smooth the canal only in the straight coronal portion of the root. The diameters illustrated are only approximate and refer to the tip diameter of standardized instruments used in the preparation of a root canal system.

has viable tissue in the apical half of the canal or if the tissue is non-vital and likely infected.¹³

First, a non-vital and infected canal should be cleaned to within -0.5 mm of the radiographic apex. Instrumentation beyond this point will result in irritation of the periodontal ligament tissue, continual bleeding or seepage back into the canal, or unnecessary injection of bacteria and foreign-body protein into this potentially inflammatory tissue. On the other hand, instrumentation short of this point will leave an uncleaned apical canal and infected dentinal tubules which may later be a source of chronic inflammatory potential.

In the second instance, a root canal with vital tissue in the apical half should have not been contaminated with bacteria. The macrophage response of the defence cells should still be present. The point of instrumentation in this case should terminate about 1.0 mm short of the radiographic apex. The constriction of the apical foramen has been reported to occur from 0.5 up to 2.0 mm or more from the radiographic apex.¹⁴ If the apical seal is kept just short of apical cementum and not impinging on apical periodontal ligament, there is a better chance of maintaining uninflamed tissue and, possibly, healing will occur as a cementum overgrowth at the foramen.

Indications to fill a canal

Much has been written about the pros and cons of culturing a canal to determine if it should be filled.¹⁵ The

ultimate aim of instrumentation is to disinfect the root canal system. Not only should viable bacteria be removed from the canal, but the bulk of pulp tissue protein should be debrided. We do not intend to debate whether or not taking a culture will assist in achieving this objective, but the desired result should not be overlooked.

Most practitioners have found that other indicators are just as important a determinant in deciding when to obturate.¹⁶ If the tooth is asymptomatic, if the canal is free of odour and apical discharge and if the root canal system has been cleaned and shaped to an optimal (but not necessarily maximum) size, it should be ready to obturate. Highest success rates are achieved if the canal is as sterile as possible and well sealed with an inert, non-toxic material. There is no excuse for filling a poorly disinfected canal with an irritating filling material. Optimal results should be found if these basic principles are followed.

If the apical foramen is small and the root canal has some degree of curvature, the direct apical impression method using gutta percha will most likely produce the best seal. This method applies to both anterior and posterior teeth (**Fig 4**).

The principles behind an apical impression are:

(1) the preparation of a curved canal at the apical area can rarely be made round like the shape of a rolled gutta percha point; (2) increased taper has been placed in the canal preparation in an attempt to remove the constriction which occurs short of the end of a curved prepara-

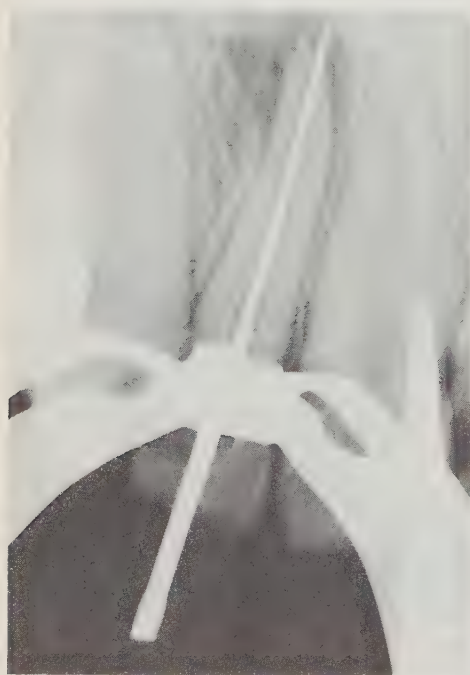


Figure 2A



Figure 2B



Figure 2C

Fig 2 (A) The maxillary right central incisor was filled with gutta percha using the direct apical impression technique. Note: the tapered medium gutta percha point is intentionally fit about 1.0 mm short. The point has also been notched at the reference length on the incisal edge. **(B)** After dipping the apical tip of the point, it was seated and condensed with warm vertical condensation. The apical foramen is now reached and two lateral canals mesial-midroot were filled with sealer. **(C)** One year later, the radiolucent areas at the apex and mesial-midroot have filled in with healing bone. The slight sealer excess in the periodontal ligament will continue to resorb.

Fig 4 This radiograph is of a completed root canal filling using only gutta percha in what is typical of the complexity of root canal anatomy often encountered in the posterior teeth. A fourth, separate, distolingual root is seen between the three normal roots. The distal buccal root was straight until the apical 2 mm. Careful instrumentation and chloroform-rosin dipping sealed around the curve without perforation. Both mesial canals were curved gradually and had to be shaped with the tapered preparation also, to minimize the chance of perforation and ledging. Note: the first and second premolar roots are also anomalous double canals.

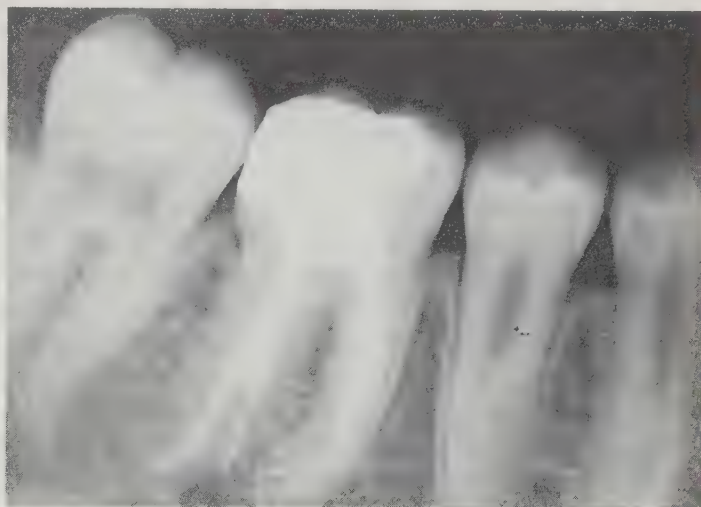


Figure 4



Figure 3

Fig 3 This radiograph demonstrates a central incisor with a rare occurring triple lateral canal in the mesial midroot. Lateral canals can occur at any point in the root surface and may go in any direction. Note: there is no sealer excess at the apex despite vertical condensation pressures on the sealer cement. Apical impression with chloroform-rosin was used in this case.

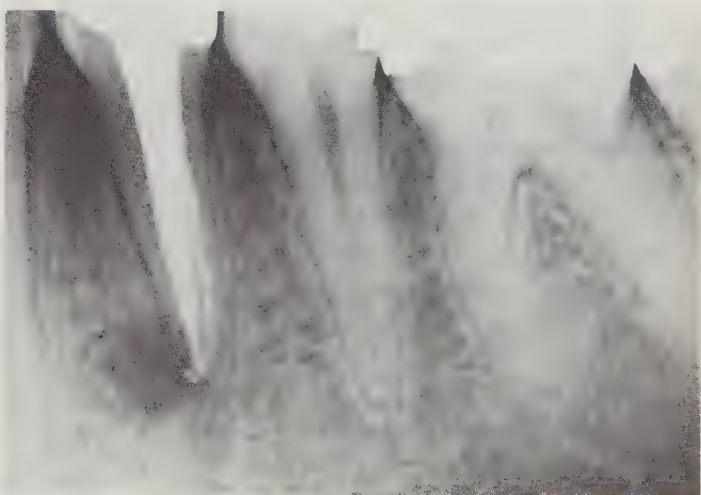


Figure 5A

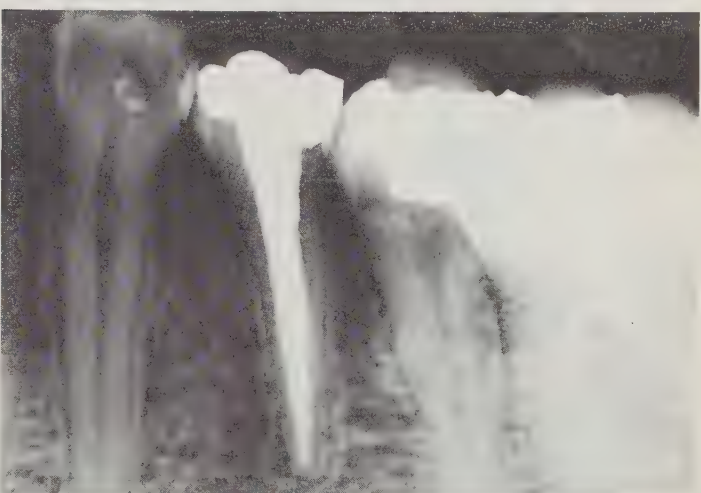


Figure 5B

Fig 5 (A) Apical impression method is suited to multirooted teeth as well. This mandibular first premolar has two canals that join in a common apical foramen. Only a small amount of sealer is expressed out the foramen during condensation.

Fig 5(B) One year later the periapical bone has regenerated and a lamina dura is re-established around the root apex. Note: the double periodontal ligament on the distal surface of the mandibular cuspid. This feature would indicate a likelihood of a double canal in this root also.

tion. (i.e. the so-called "elbow" in Fig 1); (3) the closer the adaption of gutta percha to the walls of the canal, the less amount of root canal cement is required. A thick bulk of sealer may dissolve at a later date; (4) a closer adaption of gutta percha to the apical foramen, particularly in vertical condensation, will result in less cement flowing past the main cone and into the apical tissues; (5) after the main cone is seated at the apex, generally in any filling technique and particularly in a curved canal, there is relatively little moulding of the point in the apical 5 mm level, compared to condensation in the main body of the canal.

Obturation of the apical foramen

The canal to be filled in this case has been asymptomatic for a week with all the other indications to fill as described above. It has been prepared, using the tapered preparation because there is a moderate curve in the apical one third of the root.

Once the temporary filling and medicated cotton are removed, the canal is checked for dryness. The pulp chamber is then irrigated with sodium hypochlorite to float out any dust made in removing the temporary fill-

ing and to chemically disinfect the canal surface for a second time. It has been shown that many culture reversals can occur in the interval since the last instrumentation.¹⁷ Repeated flushing with hypochlorite and freshening of the walls with an instrument of the same size as was last used will again produce a "surface sterile" canal, if for some reason there has been recurrent bacterial growth between appointments. However, any sign the canal was not properly disinfected should be followed by re-instrumentation of the canal surface and a search made for a second canal (Fig 5).

We have found it advantageous to retain the last instrument used to shape the apex in the patient's chart since the last appointment. This file, with stop still attached, is placed in a small, labelled envelope. It is now checked for length and flexibility at the tip, and re-sterilized in a hot bead sterilizer at chairside for 10 seconds or more at a temperature of 450°F. This instrument still has the same curvature which was placed in it at the last appointment and is used to refreshen the walls of the tapered canal and to check for inter-canal debris, particularly in the foramen region.

A gutta percha point is now fitted to the prepared

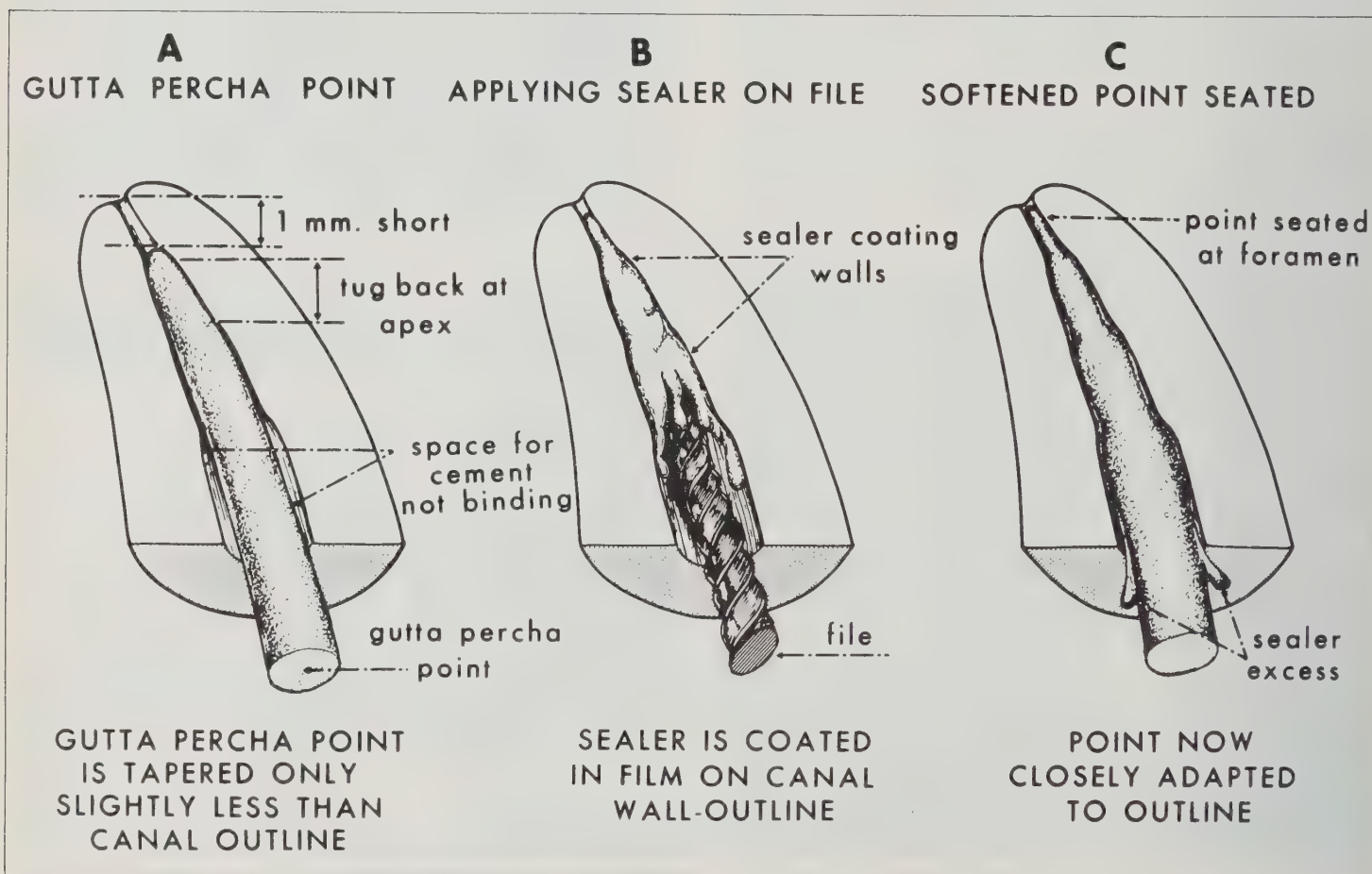


Fig 6(A) A master cone gutta percha point is trial fitted so that tugback occurs slightly short of the prepared apical foramen. Proper shaping of the tapered canal insures only a slight space for cement coronal to this region. If the point fits exactly to or beyond the radiographic apex, it is intentionally cut back about 1 mm short. (B) The last size file, which will reach the apical foramen, is used to coat a film of sealer along the walls of the canal, taking care to carry sealer as close to the foramen as is possible. (C) After the gutta percha point is softened in the apical 2 to 5 mm end in a solution of chloroform and rosin, it is seated to the apical foramen by firmly pressing it to full working length. A direct apical impression is made of the apical canal, while sealer excess coats the canal walls and flows into lateral canals during subsequent coronal canal condensation.

canal which is still flooded with sodium hypochlorite. The wet-fitting of a point has two functions: first, the hypochlorite will help to sterilize gutta percha which may have been inadvertently contaminated¹⁸ and second, it allows for a longer time for contact of hypochlorite in the canal itself and therefore more time to digest protein or bacteria which may still be present in thin fins and lateral canals.

The choice of a master cone will depend on the technique used to obturate the main body of the canal. The focus of this article is on the apical foramen. The principle of fitting a point for direct apical impression is the same whether the filling technique is vertical or lateral condensation. We will touch only briefly on the method of each of these techniques for condensing the main body of the canal. Our main concern is to make a direct impression and seal in the apical 5 mm area.

Vertical condensation and apical impression

The technique of vertical condensation and warm gutta percha has been described by Schilder.¹² A non-standardized gutta percha point is selected so that the taper is just less than the taper prepared in the canal. The point should bind in the apical foramen area first and be loosely adapted in the coronal half of the canal without binding in a constriction. In the typical narrow curved canal described, a fine-medium point is carefully trimmed to match the No. 25 file diameter and fitted for tug-back at the working length. The greater bulk of gutta percha in the butt half of the point allows more pressure in seating the tip of the point.

A radiograph is taken to confirm this length. If tug-back is not adequate, then another half millimeter is cut from the tip of the gutta percha point, using fine scissors. Once the point is fit and confirmed, an extra millimeter is cut from the apical tip of the point to make it slightly short of the working length (**Fig 6A**). The canal is now dried with paper points and sealer is applied along the canal walls to the apex using either a lentalo or the last file which reaches the apex (**Fig 6B**). Now the gutta percha point, which has been wiped in alcohol and air dried, is dipped in a chloroform-rosin solution.* Only the apical 2 to 3 mm is softened for one to two seconds, then immediately inserted gently into the canal, giving time for excess sealer to flow coronally. Finally, the point is seated with a firm pumping action in the last millimeter (**Fig 6C**). The reference point, marked on the

occlusal reference point, is seen to move 1 mm apically as the point is finally seated. This can be confirmed with a radiograph before further condensation is begun.

As with the vertical condensation technique, the main cone of gutta percha is condensed apically by alternating between softening of the cone using a heat carrier and compressing the material with a special series of blunt condensing instruments. The wave of condensation passes up the canal to within 5 mm from the apex, and then back again as the canal is back-filled. This technique has been described elsewhere.¹² Lateral canals and fins will most likely be filled with sealer under pressure as the condensation continues (**Fig 2**).

If no chloroform-rosin is used, it should be noted that the apical portion of the cone is not heated, and therefore apical pressure is required to seat and closely adapt the apical 5 mm region. Since the canal diameter in a curved canal is rarely round after preparation, sealer cement is often seen to flow past the foramen and into the periodontal ligament space, until the apical end of the point is compressed into place. When we now use the modification of the direct apical impression technique, it was found that the foramen was sealed almost as soon as the point was seated. Sealer can still flow into lateral canals and fins but relatively little material was compressed out the apical foramen.

The supposed mechanism for this early adaption of the apical point was diagrammed (**Fig 7**). When the point was dipped in the chloroform-rosin fluid, only the outer layer became softened. As the surface of the apical point came into contact with the eccentric preparation of the canal walls, it was able to flow and conform. The point,

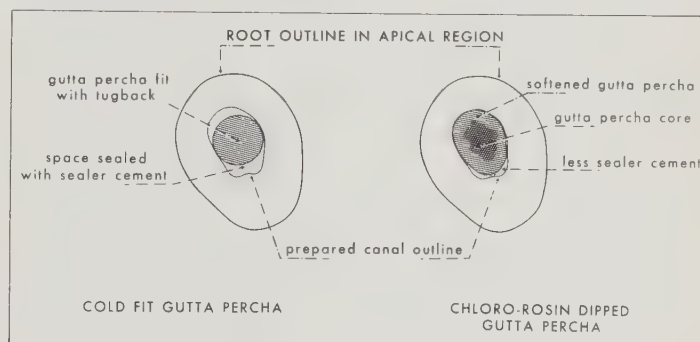


Fig 7 The mechanism of direct apical impression is schematically outlined in these line drawings of a curved root in the apical tip region. Root canal enlargement, even with careful filing and tapering around a curve results in an out-of-round preparation. Fins, webs, and lateral canals may also remain. The cross section on the left demonstrates how root canal cement must fill eccentric voids to produce a seal. Much sealer may flow past the foramen into apical tissues during condensation until this point is seated. The cross section on the right shows a gutta percha point which was oversized, but softened on the surface with chloroform-rosin. The outer surface of the point more closely moulds to the eccentric canal outline both longitudinally and in cross section. The inner core of gutta percha should stay hard in order to aid in sealing the point. The lesser amount of sealer flows coronally and is still available to seal lateral canals if they exist.

*Chloro-form rosin solution can be made by dissolving the purest grade of rosin obtained from your pharmacy in a small bottle of chloroform (U.S.P.). Crystals of rosin are placed loosely in a stoppered bottle, such as a cavity varnish bottle, and chloroform is poured in to fill the spaces. The rosin will dissolve after a short time. If the rosin is too thick, it will cling to a gutta percha point as a bead and more chloroform should be added. If the solution is too thin, it will not appear to wet a point at all, and more rosin crystals may be added.

which still has a solid core, was pressed closer to the apex so the volume of gutta percha more closely conforms to the volume of the canal. The amount of sealer was reduced to a minimum and should now only be enough to form a film on the dentine walls and a seal in the dentinal tubules.

The amount of chloroform-rosin fluid on the point should be kept to a minimum as excess chloroform could be irritating to vital tissue. Furthermore, the excess will evaporate, resulting in shrinkage and potential voids in the filling material. The point was dipped only long enough to soften the outer surface. Larger diameter points, which may have to be seated further, may need longer times in the solution. A certain amount of experimentation is needed to "feel" this method, so a number of trials should be practised in the laboratory.

LATERAL CONDENSATION AND APICAL IMPRESSION

The Brilliant method for apical impression of lateral condensation has also been described.¹⁹ The general principles of obturation of the foramen using this method are similar to those described above. The tapered preparation is also used, but a minimum size to the apex seems to be a No. 40 file. This need for a larger instrumentation size may restrict the use of this method in severely curved or narrow canals.

When fitting a master cone, a standardized cone, approximately two sizes larger, was chosen. This point, which is fitted in the tapered canal, will bind 1.0 to 1.5 mm from the apical limit. However, after the point was dipped in chloroform-rosin, it can be tapped into a full seat at the prepared length. In fine or moderately curved canals, a D-11 spreader was inserted to within 3 to 5 mm from the apex, rotated and removed. This lateral space was filled with a secondary fine gutta percha point dipped for a second or less in the chloroform-rosin solution. This procedure was repeated until the main body was filled with lateral points. This method of lateral condensation should have produced a solid core of gutta percha. Each point added should melt and fuse on the surface to the main core. Sealer, which was coated on the canal walls, now plays only a secondary role in filling voids and maintaining a seal.

SUMMARY

The purpose of using gutta percha as an obturating material is its ability to be more closely adapted to the walls of the preparation. This purpose is realized in the main body of the canal in either vertical or lateral condensation techniques. However, there is little change in the material in the apical region using the conventional methods of fitting a point. Studies on the effect of instrumentation on canal shape and canal system anatomy show care is also required in fitting a point to the apical

area to reduce the amount of sealer needed to fill voids and seal lateral canals. The use of a main gutta percha point, fitted slightly short, dipped in a surface-softening solution of chloroform-rosin and seated in a direct apical impression is advocated to enhance the fit and seal in the apical region.

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Our thanks go to Alex Domokos for the excellent illustrations, and to Susan Probst for typing this manuscript.

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Conservative treatment of apical foramen

New root canal techniques

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Techniques for cleaning and obturating the root canal system have made gradual evolutionary change over the past few years. Methods which were formerly taught are now recognized, in some cases, as being less effective in sealing the apex against leakage and reinfection.

Teeth with fairly straight and uncomplicated roots can be instrumented and filled with reasonable certainty using former techniques. However, teeth with curved roots and complicated anatomy are often perforated through the apical foramen or ledged and filled short.

THE TYPICAL CURVED CANAL

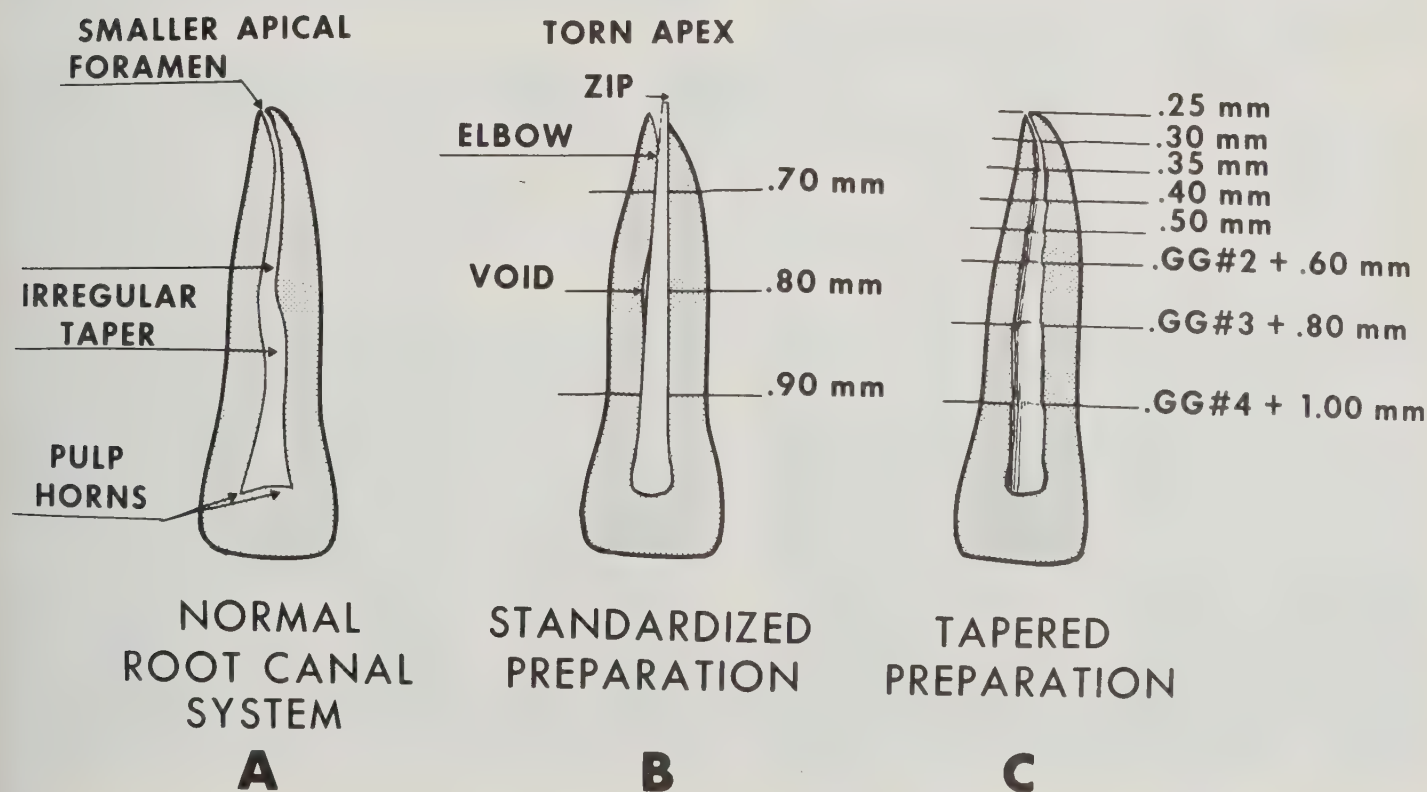


Fig 1a Tooth No. 12 has a No. 20 file in a moderately curved root. The radiolucent area associated with the root apex can be seen to extend down the root in the distal periapical region. Fig 1b Obturation of this canal using gutta percha shows the careful shaping of the tapered preparation. The relatively small apical foramen has not been shifted or perforated and helps to limit the extension of the filling material. Fig 1c One year after serial shaping and filling with gutta percha, the apical area has largely filled in with bone. Reaming to enlarge this canal would have resulted in an unsealable apical delta.

Since there is a poor apical seal in these cases, the root canal treatment may fail.

Some clinicians advocate that a practitioner should: fill the straight part of a curved root and surgically remove the curve later; or attempt to straighten and round out the canal to fill with fine silver wires; or to rely upon formalin-paste fillings to compensate for poor cleaning technique. This does not mean temporary and inadequate treatments for these difficult cases should not be accepted. Recent research has given insight into the internal anatomy of a root canal and the effect of instrumentation. A combination of techniques has been suggested by the authors which will more effectively clean the root canal system. The technique also prepares the canal for efficient sealing of the space with gutta percha as the filling material. The rationale and methods used will be explained.

ROOT CANAL ANATOMY

Callahan¹ pioneered the study of the internal root canal. By thin sectioning numerous extracted teeth in the plane of the root canal, he recognized that apical deltas and lateral canals existed in many teeth. His work was widely published at the time but has since been forgotten. The Johnson-Callahan technique of softening gutta percha in the root using chloroform-resin as a sealer was devised in an attempt to adapt to the root canal variances.

The study by Hess and Zurcher² is more widely known.

They injected vulcanite into the pulp cavity through a small hole drilled in the crown. After dissolving the tooth substance away from the cured core, a cast in three dimensions could be seen. The intricate internal anatomy demonstrated by this technique was almost enough to dissuade most practitioners from attempting molar or bicuspid endodontics.

Recent studies by Skidmore and Bjorndal³ have used injectable silicone to demonstrate root canal casts. Gutierrez and Garcia⁴ and Davis, Brayton and Goldman⁵ have also studied the casts of root canals after instrumentation has been completed. Many lateral canals, intercanal fins and anastomoses, apical deltas and canal irregularities were still apparent even after the canal walls were felt to be smooth.

In their latest article, Larder, Prescott and Brayton⁶ dissolved the dentine away from completed root canal fillings. The teeth were filled by three gutta percha techniques. They found that chloro-percha fillings had the best chance of conforming to the internal anatomy of the root canal. The effect of shrinkage on the gutta percha material and subsequent seal was not studied.

The size and shape of the apical foramen must be taken into account during the preparation and filling of a root canal. Dow and Ingle⁷ state that the most common reason for failure was due to inadequate seal of the apical foramen. Since this was the region of contact between the root canal system and the vital tissues beyond, the apical foramen should be our main point of



Fig 2a Tooth No. 12 had been enlarged during many emergency appointments to a No. 100 reamer size. Probing with a No. 90 file revealed an apical perforation into continually bleeding tissue. Fig 2b Condensation with gutta percha of this over-enlarged canal resulted in the main cone-over-extending into the apical tear. The original apical foramen is outlined with sealer expressed from the apex during vertical condensation. A torn apex is difficult to dry and seal. Fig 2c Surgical correction of the perforated apex was necessary to obtain a certain seal. Apicoectomy, curettage of the granuloma, and retrograde amalgam were done immediately after the root filling.

concern in endodontic therapy.

Pineda and Kuttler⁸ have measured the apical foramen in single rooted and multi-rooted teeth. They noted that the foramen does not often coincide with what would be the radiographic apex and was often from 0.5 up to 2.0 mm short. Some degree of clinical judgement was often required in determining this point.

Greene^{9,10} also noted that the apical foramen was rarely round and was more often oblong in shape. The largest dimensions were recorded for maxillary central incisors, palatal roots of maxillary molars and distal roots of mandibular molars. Sizes varied from 0.01 mm to 0.65 mm in fully formed teeth. The size of the foramen in other teeth is often much smaller. It should also be noted that many accessory foramen of smaller size were found in the apical few millimeters of the root.

INSTRUMENTATION OF CANALS

Studies have shown that a reaming action was the fastest way to enlarge a canal,¹¹ but reaming in any type of curved canal can have a disastrous effect on the shape of the prepared canal and inevitably an out of round preparation will result.¹² Almost 90 per cent of all canals are curved. The more curved a canal, the more the instrument tends to straighten. Therefore, reaming in these canals results in a shift of the apical foramen and an apical tear may be formed. Since an apical tear is very difficult to seal adequately, the case will often result in failure.

With the more common use of stainless steel instruments in endodontics, there is less liability to fracture.¹³ The former carbon steel endodontic instruments were subject to severe corrosion when used in the protein-sodium hypochlorite medium in a canal.¹⁴ Many practitioners considered root canal files unreliable because they were easily weakened through corrosion. This is

no longer the case, and stainless steel No. 06, No. 08 and No. 10 instruments can be used with confidence.

We recommend only pre-curved files be used in a curved canal. A file will more effectively clean by contacting more walls of the root canal. This is called "circumferential filing." Careful curving of the file tip to match the curve of the canal, as noted on the radiograph, will result in enlarging without shifting the site of the apical foramen (**Fig 1a, 1b, 1c**).

Also, the size of the apical foramen should not be overly enlarged. A No. 30 or No. 35 file is often a large enough instrument to clean the apex of smaller and curved canals. An apex that has been reamed to a No. 90 size is likely hopelessly torn (**Fig 2a, 2b, 2c**).

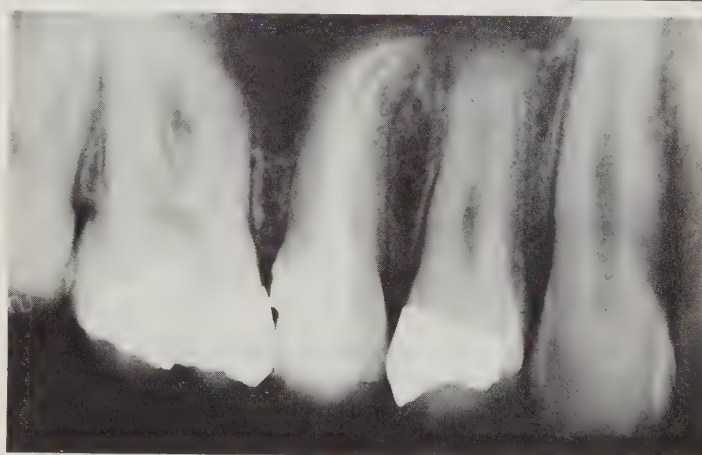
We also know from instrumentation studies that during enlargement of the canal the preparation cannot be made round at the 5 mm level and rarely occurs at the 1 mm level.¹⁵ Therefore, a silver point alone cannot seal only the canal apex and relies entirely on the soluble sealer to fill the void. The more curve to the canal and the more it is enlarged beyond the minimum size, the more the cross-sectional shape of an apical foramen becomes oblong or "teardrop" in shape.^{11,16} It is debatable if the more compressible gutta percha can be adapted to this off-round shape. Therefore, it is better to minimize apical instrumentation to prevent the apical tear (**Fig 3a and 3b**).

LATERAL CONDENSATION PREPARATION AND TAPERED PREPARATION

Standardization of endodontic instruments was advocated by Ingle in 1955 and adapted by most manufacturers soon after.¹⁷ The concept behind standardized instrumentation was that after a canal was prepared with a standardized reamer, then the same size filling point,



3A



3B

Fig 3a Root development in proximity to the maxillary sinus floor has resulted in severe dilaceration of the root apex of tooth No. 15. A carious exposure necessitated root canal treatment in a canal shape which may have previously been attempted with a round silver point. **Fig 3b** Careful curving of files and serial tapering have produced a smooth canal which was filled with gutta percha and vertical condensation. The apical foramen was not shifted in position, nor were the walls perforated or ledged in this anatomically very difficult case.

either gutta percha or silver cone, could be inserted into the canal space. With some adjustment in the point it should be made to "seal" the apical foramen area. Studies previously mentioned^{12,15} show this hypothetical seal can be achieved only in very straight canals.

Two factors can compromise the durability of that seal. First, if a reaming action is used in enlarging the canal, the preparation is rarely round and cylindrical like the filling material. Weine et al¹⁶ demonstrated the elbow shape produced in enlarging a curved canal. This means that a constriction of the preparation occurs at a point distant from the foramen and more sealer is required to fill in the void in the apical 5 mm level.

Second, if gutta percha is used, the canal must be prepared to a No. 60 or No. 70 instrument size to allow

for sufficient stiffness of the gutta percha to seat the point properly. This often results in an over-preparation of the apical foramen which shifts the position of the apex (Fig 4c). To counter these problems in the preparation and filling of curved canals, the tapered preparation is gaining more acceptance by endodontists and is being taught in many dental schools.^{18,19}

The tapered preparation leaves the apex smaller, has more taper in the apical 5 mm and is opened larger in the coronal half of the canal.²⁰ The essential differences in the shape of the two preparations are depicted in Fig 4 and 5.

The reasons and advantages for changing the standardized preparation technique to one of a tapered or serialized preparation are: (1) smaller apical preparation minimizes tearing of the apical foramen; (2) when smaller precurved files are utilized the apical foramen is not shifted in position; (3) the increased taper at the apex acts as a stop to limit over-extension of gutta percha fillings; (4) increased tapering also acts to eliminate the "elbow" or hour-glass shape so often produced in curved canals; (5) the coronal part of the canal is opened more where the root is thicker so that irrigation can be done closer to the apical root canal system; (6) coronal enlargement allows for ease of manipulation of filling materials.

In comparison, the standardized preparation of the root canal results in too much dentine being removed from the apical half of the canal and often too little

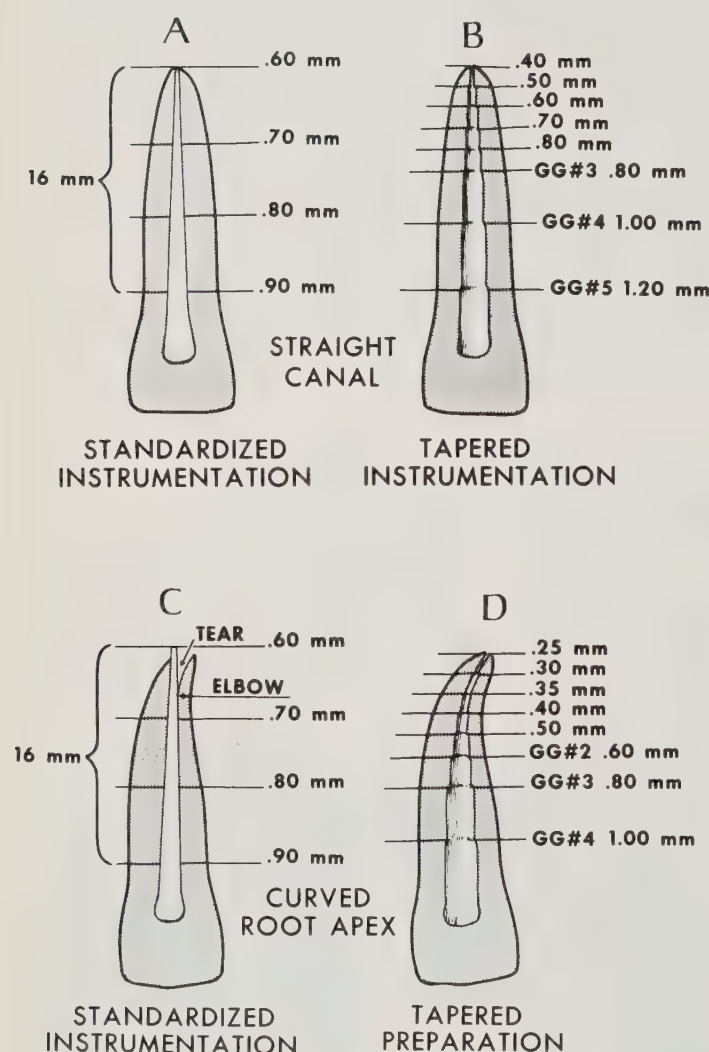


Fig 4 A comparison of the theoretical shape of an instrumented canal shows the most difference when comparing straight (A and B) and curved canals (C and D). The standardized preparation in a curved apex tooth may result in violation of the apical foramen. This produces the "elbow" or constriction short of the end of the canal. The straightened effect also tears the apical foramen as it is shifted from its original position (C). In comparison, the tapered preparation of a curved root apex (D) enlarges the foramen, which is generally very small in these types of roots. The canal is enlarged gradually without shifting its original course significantly.

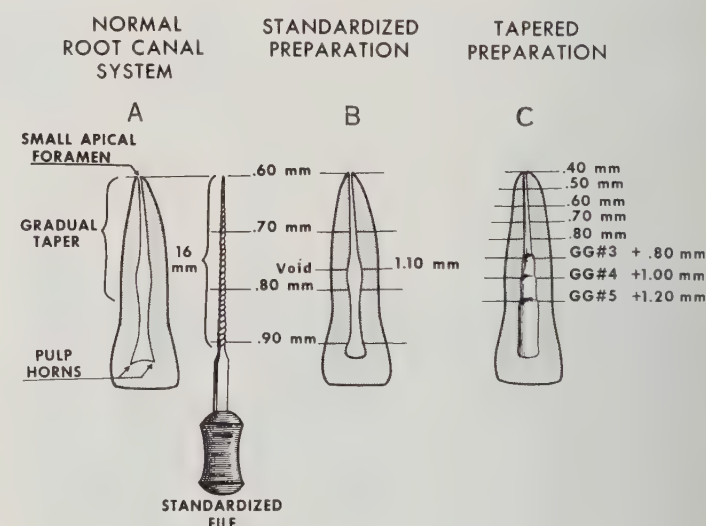


Fig 5 This schematic drawing outlines the differences in the standardized preparation and the tapered one. (A) depicts a single canal tooth with a gradually tapering root canal, undercut pulp horns which must be eliminated, various expansions in the walls which should be smoothed, and a small foramen about 0.5 mm from the radiographic apex. (B) shows the shape put into the canal if a No. 60 file is reamed to enlarge the canal. The foramen is torn during the enlarging process and uncleaned canal walls may be left in irregular areas. (C) is the tapered preparation as applies to the curved canal. The foramen is left much smaller while the coronal half of the canal is enlarged more with rotary gates-glidden burs.

dentine planed from the coronal half of the canal. Alternately, the tapered preparation results, more or less, in a uniform enlargement of the root canal system through its entire length and a better chance of planing the walls smoothly.²¹ Most often, the canal is curved and a gradual straightening occurs throughout its entire length but not at the expense of the apical foramen (Fig 4(C)).

METHODS OF PREPARATION OF THE TAPERED ROOT CANAL

Length determination of the root canal should be done with a small gradually curved No. 15 file which has a stop placed just short of the provisional length as measured on the radiograph (Fig 6a(A)). After intercanal debris is irrigated and cleansed away, the file is manipulated gently in the apical area to determine the direction of the canal curvature (Fig 6a(B)). Initial instrumentation at this stage with too large an instrument will create ledges and often force necrotic debris and bacteria out the apical foramen. Pulp stones and similar blockage can also be forced into the apical canal at this time.

Once the actual working length has been established by radiographs, the apical canal is enlarged using a filing action. Each successively larger file is curved similar to the original file placed to the apex. After resistance is felt with the file blades touching dentine in the apical area, all filing action should be done away from the apex and towards the coronal access opening. When binding is felt in the apical region of the canal, the foramen should be prepared one size larger. In fine and curved canals, the apical foramen is often enlarged no more than a No. 25 file size (Fig 6a(C)). This is "minimum size" to open the apex. If the apical foramen is felt to be larger, it is prepared until binding of the very

tip of the instrument is felt just short of the apical foramen. In the past, however, the tendency was to enlarge the foramen too much (i.e., three sizes larger than the instrument which first would bind). This resulted in a tear which should be avoided.

Once the apical foramen is enlarged to the No. 25 or No. 30 size file, the coronal portion of the canal is enlarged. The gates-glidden burs are designed to remove dentine on all peripheral walls of the canal. The end of the bur has a blunt tip and is side cutting only. Careful use of these burs will quickly enlarge and smooth the canal walls with little chance of perforation.

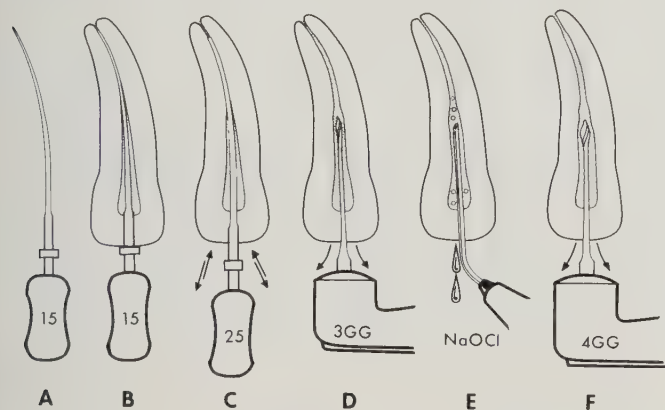
Only in very small canals will the No. 2 gates-glidden be required (Fig 6a (D)). Usually enlargement of the canal is started with a No. 3 gates-glidden which is approximately 0.8 mm in diameter. With the bur running at moderate speed and the canals wet with sodium hypochlorite, the bur is inserted until resistance is felt, then the bur is withdrawn against each wall of the canal. Care must be taken never to approach any closer than 5 mm from the apex.

Once the walls of the canal in the coronal half are smoothed with the first gates-glidden bur, all dentine dust and shavings are washed out with sodium hypochlorite (Fig 6a(E)). The apex must be recleared with the last size file to reach the apex. This is called recapitulation. The No. 25 file removes any dentine dust which may have packed into the apical portion of the canal (Fig 6b(G)).

The same procedure of enlarging and smoothing the coronal canal is carried on using the No. 4 gales-glidden but taking care to penetrate 1 mm less (Fig 6a(F)). A No. 5 gales-glidden could also be used another millimeter shorter if the canal was larger than normal. Ir-

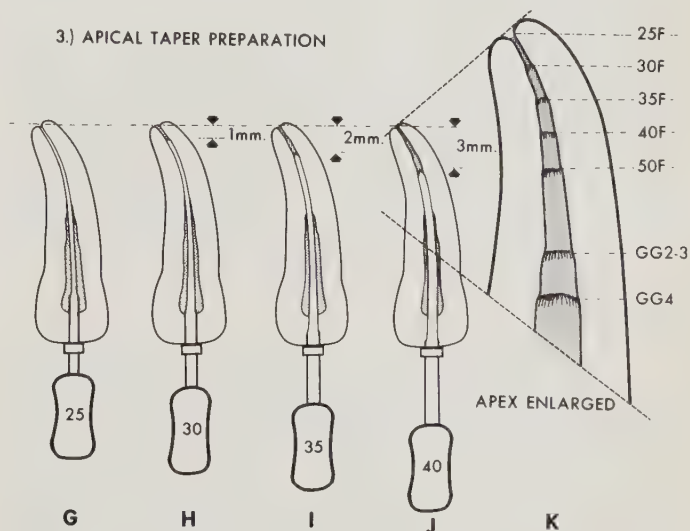
1.) FORAMEN PREPARATION

2.) CORONAL PREPARATION



6A

3.) APICAL TAPER PREPARATION



6B

Fig 6a Careful preparation and enlargement of the foramen is depicted in A, B and C in a narrow, curved canal. A No. 15 or smaller file is precurved to fit the canal curvature and with a peripheral and downward filing action the foramen is enlarged to a No. 25 minimum file size. Fig 6b The apical taper preparation in a minimum size, narrow and curved canal is illustrated. A No. 25 file must recapitulate the apical foramen between each instrument, as in (G). The apical taper is made by filling intentionally short with each larger instrument as in illustrations H and J. A schematic representation of the gradual taper is enlarged in K.

rigation and recapitulation with the No. 25 file is necessary after using each gates-glidden bur (**Fig 6b(G)**).

The root canal is now opened to more than 1 mm in diameter in the coronal half and the apical foramen is cleaned to a minimal size without tearing or shifting. A taper is made in the apical 5 mm to join these preparations together. If the No. 25 file was judged to have rounded the apical foramen, a No. 30 file is measured 1 mm shorter, curved similarly to the last file, and the canal is enlarged to the shorter length (**Fig 6b(H)**). No. 35, No. 40 and No. 50 files are used similarly, each file 1 mm shorter than the last (**Fig 6b (H and I)**).

The canal is finished by recapitulating with the No. 25 file which last reached the apex. The walls of the canal are smoothed and planed and well irrigated with hypochlorite. The smallest diameter of the preparation is at the apical foramen. The taper to the access opening is gradual but relatively uniform, and the original curvature of the canal is maintained (**Fig 6b(K)**).

The tapered preparation is schematically drawn in **Figure 4** for a straight canal and for a curved canal. A standardized point will not now suit these preparations. Techniques for making a three dimensional obturation of the tapered preparation using gutta percha will be discussed in another paper. Gutta percha must be made more plastic either by the use of heat or solvent chemicals such as chloroform-rosin. By softening of the gutta percha in these techniques, the apex, lateral canals and internal anatomy of the canal are better sealed. The result should be a solid core of gutta percha which is made to flow into the entire root canal system by duplicating the three-dimensional anatomy, sealing out all portals of exit into the periodontal ligament and taking particular care to fully obturate a carefully shaped apical foramen.

The illustrations and clinical examples depict curved canals in incisor and premolar teeth. The tapered preparation is applicable to molar teeth. In fact, indications for a tapered preparation become more important when root canal treatment on the narrow, curved mesial canals of the mandibular molars and the mesiobuccal canals of the maxillary molars is considered.

SUMMARY

A review of the literature of the internal anatomy of root canal systems has been made. Studies show a reaming action in a curved canal may result in a shifting of the apical foramen and cause a canal diameter which is not round in cross-section. The importance of making a preparation which has a gradual, even taper from the small apical foramen has been discussed. Voids or constrictions in the taper will result in difficulties in effecting a seal during the obturation stage of root canal treatment. A comparison has been made between the standardized preparation and the tapered preparation.

Difficulties in treatment, which occur if the canal is curved, have been outlined and the rationale for using a tapered preparation has been presented. A step-by-step outline for making a tapered preparation has been described and diagrammed in line drawings and illustrated with sample case histories.

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Thanks to typists Shirley Crane and Audrey Schwarek and illustrator Alex Domokos.

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Review of Localized osteitis

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A clinical audit to determine the incidence of localized osteitis was carried out on patients admitted for right and left mandibular and maxillary third molar surgery. Of the 447 selected patients, 37 subsequently presented with the "post extraction osteomyelitic syndrome",¹ which we now call the "dry socket syndrome" (D.S.S.).

ABSTRACT

The signs and symptoms of localized osteitis (dry socket syndrome), etiology, method of surgery, and treatment are compared with the existing standards of treatment. In this study the incidence of localized osteitis in a selected group of 447 patients who underwent third molar surgery was 8.3 per cent.

SOMMAIRE

Les signes et les symptômes d'une ostéite localisée (syndrome de l'alvéolite sèche), l'étiologie, la méthode d'opération chirurgicale et le traitement sont comparés aux normes de traitement actuelles. Dans cette étude, pour un groupe déterminé de 447 patients qui avaient subi une intervention chirurgicale sur les troisièmes molaires, le taux de l'ostéite localisée était de 8.3 pour cent.

Patients were selected from the files of the oral surgery service in the Department of Dentistry, University Hospital, London, Ontario. A recent survey of the literature revealed an average incidence of 20 to 30 per cent for third molar surgery, with a high of 68.4 per cent.² This would mean that practitioners would be spending an immoderate amount of clinical time treating patients with this postoperative syndrome. Since this did not appear to be the case, this audit was carried out to find out our incidence and compare methods of care with others.

CLINICAL MANIFESTATIONS

The D.S.S. initially presents two or three days after surgery, with a history of above normal postoperative pain. At other times, a combination of fetor oris and mild pain are the primary symptoms. A tentative diagnosis is made when a patient presents after having a tooth extracted and complains of local or referred pain, at times an obvious fetor oris and a partially or completely denuded bone crypt. A confirmed diagnosis is made when relief is obtained by placement of a medicated dressing.

The etiology of localized osteitis has remained obscure for years.² However, many theories have been put forward: micro-organisms,³⁻⁷ surgical trauma,¹⁻³⁻⁴⁻⁸⁻¹⁵ fibrinolytic mechanisms,^{13,16-18} altered circulation,¹⁹ systemic factors,²⁰⁻²² birth control pills,^{12,23-25} sutures, flaps,²² pericoronitis, and types of anaesthesia. Matching suggested etiological factors, many forms of prevention have been tried in order to avert this post-surgical complication.^{2,3,7,19,26-29}

METHODS

Subjects were referred patients of the Dental Department of the University Hospital, London, Ontario. They were screened by reviewing all the oral surgery charts (1972-1978) for single or multiple surgical removal of mandibular third molars. Only charts with hospital radiographs (panorex and periapicals) were included.

The surgical technique for removal of third molars includes all the known standard aseptic techniques for oral surgery. A full thickness mucoperiosteal flap was raised as follows: (a) the maxillae (**Fig 1**): an envelope flap, which began in the midline of the tuberosity heel to the distal of the second molar and enveloped around the second molar with perhaps a required mesial vertical relief incision; and (b) the mandible (**Fig 2**): an envelope flap, from base of internal and external oblique line, midline to distal of second erupted molar and en-

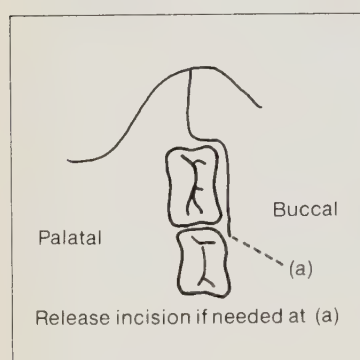


Fig 1 Envelope flap for third molar odontectomy (maxillae).

veloped the teeth, sometimes as far forward as the second bicuspid area and if vertical relief was needed, it was carried buccally at the start of the incision.

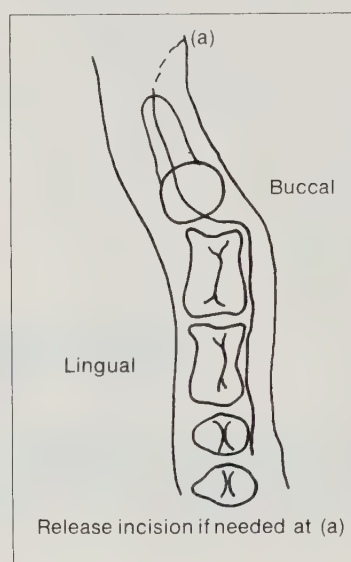


Fig. 2 Envelope flap for third molar odontectomy (mandible).

In all cases, no extra-oral or intra-oral surgical scrub of the tissues, other than a saline lavage under the operculum prior to incision was carried out.

At incision, a lavage (using a 50-cc disposable plastic syringe with blunt needle filled with normal saline) was used. The lavage was continued while bone removal was carried out (standard surgical bur, No. 8 round and No. 701 fissure, and/or mallet and chisel). Bone cutting was carried into the marrow space to unlock the tooth from the cortical plate and release the marrow cellular potential for rapid healing. Lavage was continued during tooth sectioning (for debridement) and at the end of surgery. Particular attention was given to the toilet of the flap at the periosteal bony junction. Sutures were placed interproximally, distal to the last tooth and in the distal soft tissue tight enough to control hemostasis and approximate the tissue. A moist pressure pack was then placed over the surgical site and along the area of the raised mucoperiosteum. The average amount of saline lavage used varied depending on the number of teeth surgically removed, but for 50 randomly selected cases, the average was 260 ml.

RESULTS

The audit (**Table 1**) consisted of 447 cases — 261 females (58 per cent) and 186 males (42 per cent); 336 (75 per cent) of the procedures were performed under general anaesthesia and 82 (19 per cent) under local an-

aesthesia; 383 (86 per cent) were multiple surgical procedures and 59 (14 per cent) were single procedures; 190 (43 per cent) presented with chronic pericoronitis and 313 (70 per cent) presented with local or referred pain. A total of 1,257 procedures were performed (Table 2) and 765 (60 per cent) were mandibular third molar surgery. The degree of surgical difficulty ranged from simple soft tissue flaps (24 procedures or 1 per cent), to soft tissue flaps with considerable bone removal (1,117 cases or 88 per cent), to 116 very difficult procedures (nine per cent). The seasonal variation (Table 3) revealed 144 procedures (33 per cent) were performed in spring, 59 (13 per cent) in summer, 94 (21 per cent) in fall and 143 (33 per cent) in winter.

The oldest patient in the survey (Table 1) was a female, aged 73; the oldest male was 57. The youngest female was 12 and the youngest male was 16. The average age was 25 (females 24; males 26).

Types of impaction (Table 4) as read from panorex survey film, were tooth No. 48, mesioangular 44 per cent, vertical 35 per cent, horizontal 12 per cent, distoangular four per cent, and others five per cent. DSS occurred in 37 and 447 patients (8.3 per cent) (Table 5). There were no cases in the maxillae. All cases were from mandibular third molar surgery. There were 27 cases (72 per cent) which had general anaesthesia and 10 cases (28 per cent) which had local anaesthesia; the same percentages for males (10) and females (27). Twenty-nine patients had multiple procedures, of which three had bilateral D.S.S. and eight had single procedures.

The dry socket sites (Table 5) were fairly evenly distributed between the No. 38 (19 dry sockets, 48 per cent) and the No. 48 (21 dry sockets, 52 per cent). There were none in No. 18 and No. 28 teeth. Types of impaction with dry sockets were mesioangular — 15 (38 per cent), vertical — 13 (33 per cent), horizontal — (21 per cent), and other — 3 (9 per cent). Of these, 34 (87 per cent) were moderately difficult and five (113 per cent) were very difficult procedures. Seasonal variations: 15 cases (38 per cent) appeared in the spring, 12 cases (31 per cent) in winter, eight cases (21 per cent) in autumn, and four (10 per cent) in summer. All patients presented at clinical examination with most of the symptoms for DSS. The pain was either local or referred, the clot was partially or completely disintegrated in the tooth socket, and fetor oris, in some cases, was obvious (Table 6).

TREATMENT

Treatment in all cases consisted of gentle debride-

ment of necrotic tissue, irrigation with warm normal saline lavage, and placement of a crypt dressing, using five per cent Iodoform ½" gauze soaked in eugenol. Three of the patients came from great distances and were treated with five per cent Iodoform ½" gauze saturated in Whitehead's varnish (benzoin, starax balsam of tolu, iodoform and solvent ether).

DISCUSSION

The incidence of dry socket from the survey was 8.3 per cent, some 37 cases out of 447 reviewed patient charts (1972-1978). Clinically, this appears to be realistic and is similar to Lilly's⁷ observations when he reported an in-

Table 1

Analysis of 447 patients for third molar surgery

Sex		Anaesthesia		Procedures		Pericoronitis		Pain
F	M	G.A.	L.A.	M.O.	S.O.	Chronic	Local	Referred
261	186	336	82	383	89	190	313	
58%	42%	75%	19%	86%	14%	43%	43%	

G.A. — general anaesthesia, L.A. — local anaesthesia
M.O. — multiple odontectomies, S.O. — Single odontectomies

Table 2

Analysis of 447 patients for third molar surgery

Impacted tooth				Type of surgery			
#18	#28	#38	#48	(a)	(b)	(c)	Total
242	285	385	380	24	1117	116	1257
				1%	88%	9%	100%

* (a) Soft tissue flap
(b) Soft tissue flap, bone removal, tooth sectioning
(c) Very difficult procedures

Table 3

Analysis of 447 patients for third molar surgery

Seasonal variation			
Spring	Summer	Fall	Winter
144	59	94	143
33%	13%	21%	33%

cidence of 9.1 per cent (200 cases out of 2195 odontectomies). The average incidence of D.S.S. (20-30 per cent) as previously reported would mean that a practitioner interested in third molar surgery would be spending an inordinate amount of time in treating this condition.

In the survey, the number of cases of subperiosteal abscesses (Table 7) were also recorded. In the early stages of development they may be confused with the D.S.S. and could be included in the incidence of dry socket. There were 19 cases in the study, an incidence of 4.5 per cent; if this were included in the D.S.S. cases, the total incidence would be 12.8 per cent.

Lavage with normal saline, carried out routinely, appears to reduce the number of bacteria and debris from under the operculum and the eventual inoculation of bacteria into the surgical field. The continued use of lavage as a coolant during osseous surgery, sectioning of teeth and at final debridement, again appears to reduce the incidence of D.S.S. This practice compares favorably with recent work done by Butler and Sweet¹⁹, and by Lilly⁷ et al, although our volume of saline used is less than previously reported.

The most common types of impactions (Table 4) in this survey were the mesioangular and the vertical impactions, and they were also the most common types giving rise to the D.S.S.

The majority of the surgical cases (1,117 procedures or 88 per cent) in the audit were of average surgical difficulty. Of those patients who developed D.S.S., 34 procedures (87 per cent) were of the same difficulty. The percentages of extreme difficulty were the same for the audit and the D.S.S. Very difficult cases were usually given antibiotic therapy during surgery and postoperatively, yet some still developed the D.S.S. Belinfante et al¹⁵ stated 20 to 30 per cent of third molar surgery developed localized osteitis without antibiotics, but routine use of antibiotics reduced this to seven to 10 per cent. We do not use antibiotics routinely and our incidence of D.S.S. was only 8.3 per cent. The extreme de-

Table 4						
Analysis of 447 patients for third molar surgery						
Types of Impactions						
Tooth	Total	MA	V	H	DA	Other*
#48	380	44%	35%	12%	4%	5%
#38	385	46%	34%	17%	3%	—
#28	285	51%	30%	19%	—	—
#18	242	43%	33%	18%	—	—
* MA = Mesioangular V = Vertical H = Horizontal DA = Distoangular						

gree of surgical difficulty did not increase our percentage.

In our survey, 336 procedures (75 per cent) were performed under general anaesthesia, and 82 cases (19 per cent) under local anaesthesia. Comparing these cases to those that developed D.S.S., the percentage remains similar (72 per cent general anaesthesia and 28 per cent local anaesthesia). It has been said effects of local anaesthesia and local blood supply reduction are contributing factors to localized osteitis; in these results it appears not to be the case.

In the audit, 261 females (58 per cent) and 186 males (42 per cent) had surgery. In the 37 cases of DSS, females accounted for 27 cases (72 per cent) to males, 10 cases (28 per cent), and women seem to be more prone to D.S.S.¹⁹ Of the females with the syndrome (27 cases), nine were taking oral contraceptives and one supplemental estrogen (i.e. 35 were on increased estrogen). This left a greater number of females (59 per cent) who developed D.S.S. Other authors have similarly found that women on oral contraceptives developed D.S.S. more frequently. This survey does not support this.

Such items as systemic disease and age factor did

Table 5													
Analysis of 37 patients with dry socket syndrome													
Patient information	Operation information												
37 cases from 447 survey	27 cases for G.A. (72%) 10 cases for L.A. (28%)												
Incidence 8.3% localized osteitis													
	Types of inspections												
	<table><tr><th>V</th><th>MA</th><th>H</th><th>Other</th></tr><tr><td>13</td><td>15</td><td>8</td><td>3</td></tr><tr><td>33%</td><td>38%</td><td>21%</td><td>8%</td></tr></table>	V	MA	H	Other	13	15	8	3	33%	38%	21%	8%
V	MA	H	Other										
13	15	8	3										
33%	38%	21%	8%										
7 females on birth control pills (25.9%) 1 female on artificial estrogen													
	D.S.S. by tooth												
	<table><tr><th>18</th><th>28</th><th>38</th><th>48</th></tr><tr><td>0</td><td>0</td><td>19</td><td>21</td></tr><tr><td>0%</td><td>0%</td><td>48%</td><td>52%</td></tr></table>	18	28	38	48	0	0	19	21	0%	0%	48%	52%
18	28	38	48										
0	0	19	21										
0%	0%	48%	52%										
	Instruments — Bur & Chisel												
3 cases of bilateral localized osteitis	Flap — Envelope												
Age: average age 25 for males and females	Lavage — average 260 ml.												
Chief complaint 1. local or referred pain 2. fetor oris	Systemic conditions 1 Diabetic on insulin 1 Hypothyroid on thyroxin 6 patients with allergies 28 noncontributory												
Legend: V = Vertical impaction, MA = Mesioangular impaction H = Horizontal impaction G.A. = General anaesthesia, L.A. = Local anaesthesia													

not really enter into our survey, as only two patients had systemic disease, one with chronic nephritis (age 45), the other a diabetic on insulin therapy (age 42); the only other older patient was aged 49 and on natural estrogen therapy.

The average age in our survey was 25 years, and the average age of dry socket patients was 25 years. This corresponds with a young university population which forms the basis of our practice. The maximum incidence of the D.S.S. is in the group presented age 20 to 40 years,³¹ with very few in the older age group²⁰. Bilateral dry sockets were found in three cases out of 37 and all patients were female.

Chronic pericoronitis appeared in 190 (47 per cent) of the patients at surgery. None had a history of bilateral pericoronitis, a rare finding, although many in their history had the condition separately on both sides. Patients at consultation, who had pericoronitis were treated conservatively and if successful were held for operation. At surgery, they were again asked about the condition and if chronic or subacute surgery had been performed as part of previous treatment. Those with acute pericoronitis were eliminated, because of the IV antibiotic therapy.

There were a total of 313 (70 per cent) of the survey who presented with pain (Table 6). This included those with subacute and/or chronic pericoronitis. The remainder 134 patients were pain free, they were usually patients for orthodontic removal (prophylactic removal), those with developing pathology and for restorative procedures.

Eighty-six per cent (383) procedures were multiple odontectomy, and only 59 cases (14 per cent) were single odontectomies. In most cases, the single odontectomies were the severe impactions — the very difficult surgery that was reported as 116 cases (9 per cent). The percentage of these patients treated with antibiotics was small.

The seasonal variation in the cases reported produced the following pattern: spring — 33 per cent, winter — 33 per cent, fall — 21 per cent, and summer (when the student population diminishes at the university) — 13 per cent. The busy seasons follow periods of stress; e.g. examinations and the social season. The stress probably reduces the body defence mechanism and chronic or subacute disease may become acute and the patient seeks help.

Treatment after D.S.S. was palliative and kept moderately simple. Patient charts show three treatment records lost, leaving 34 intact. Thirty-one patients were treated by gentle debridement of necrotic clot and warm saline lavage, then the crypt was packed with five per cent Iodoform gauze impregnated with eugenol; three patients were treated with Whitehead's Varnish and five per cent iodoform gauze. Whitehead's Varnish was used for those patients who had a long distance to travel as

Table 6	
Analysis of 447 patients for third molar surgery	
Pain	
Pain secondary to inflamed operculum	183
Local pain, no obvious pathology	73
Referred pain, ear, TMJ, antrum, etc.	53
Other (injected cyst, etc.)	4
Pain free	134
Total	447

this dressing keeps clean longer and encourages growth of granulative tissue in the socket, as well as being palliative. The objective of the therapy is to "make the patient comfortable".³⁰

Seventeen patients had dressings placed on Day Three; five patients on Day Four; three patients on Day Five; one patient on Day Six; four patients on Day Seven; one patient on Day 11; and three on Day 14. Twenty-one of these patients did not require a second dressing. Two patients had a second dressing on the following day; four patients, two days later; two patients, three days later; three patients, four days later; one patient, five days later; and one patient, seven days later. Of these patients, 10 did not return for a third dressing. On Days Two, Three and Four, one patient per day returned for a further dressing; no patients returned for a fourth dressing.

Relief of pain from the first dressing was achieved in the 21 patients who did not return. All patients were instructed to remove the dressing after three painless days and to continue to irrigate the area with a plastic syringe and a blunt needle, and only return if they had a problem.

The majority of our patients (26) had relief by the end

Table 7						
Patients with delayed subperiosteal abscesses (incidence 4.5 per cent)						
Sex		Anaesthesia		Procedures		Pericoronitis
F	M	G.A	L.A	M.O.	S.O.	Chronic
15	4	15	4	15	4	9
Source			Difficulty			
Local/Referred			Routine		Difficult	
15			16		3	

of the seventh day after surgery. The remaining seven were pain free by the end of the second week. The average age of 24 years shows the potential power of healing with the younger patients once the area had been cleansed and dressed.

There are many types of dressings on the market for localized osteitis and many were tried. Basically, all are palliative and ours appears to be the least expensive and the most simple. The only preventive treatment carried out was the operculum lavage done at surgery. None of our patients had a history of D.S.S. In fact, many had no teeth removed prior to third molar surgery.

CONCLUSION

In conclusion, the results of our practice audit for D.S.S. from 1972 to 1978 in third molar surgery have been presented and show: (1) The incidence of the D.S.S. for third molar surgery was 8.3 per cent in the mandible. No cases occurred in the maxillae; (2) Females with or without oral contraceptive therapy were more prone than males; (3) Saline lavage (average 260 ml) appeared to help reduce the incidence; (4) The mesioangular and vertical angular impactions were the most common and caused the most problems; (5) Difficult surgical removal did not appear to increase the incidence; (6) The effect of local anaesthesia had no greater effect on dry socket than general anaesthesia; (7) Systemic disease and age were not a factor in our survey, as the average age was 25 in healthy students; (8) Three cases of bilateral dry sockets were found in females only, and none in males; (9) The etiology of localized osteitis (D.S.S.) is still obscure. Lavage appears to be a preventive treatment; (10) The incidence of 20 - 30 per cent as described in the literature has not been confirmed in our investigation; (11) Patients complaining of D.S.S. presented with the classical triad of pain, necrotic clot and fetor oris; and (12) The treatment suggested is simple and palliative. It consists of debridement, warm saline lavage, followed by packing the crypt with 5 per cent Iodoform gauze impregnated with eugenol. Whitehead's Varnish is used in patients who cannot conveniently have repeated dressings.

We gratefully acknowledge the assistance of Grant No. PR 686 from the Ministry of Health of Ontario. Our thanks are also due to Dr. W. J. Dunn, Dean of Dentistry, University of Western Ontario, London, Ontario.

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Pulpite allergique expérimentale à un extrait de dentine cariée humaine stérile

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La carie est la cause principale des pulpites. De la dentine cariée scellée dans des cavités dentinaires standardisées induit une inflammation pulpaire chez des singes en expérimentation.¹ Des pulpites sous caries profondes sont aussi classiquement décrites chez l'homme.^{2,3} Cependant, l'émail présente souvent des défauts de structure. Il devient de plus perméable au niveau des caries débutantes à des molécules de petite taille, toxines ou enzymes qui peuvent ainsi atteindre la pulpe à travers les tubuli dentinaires. Une pulpite partielle, petite et circonscrite, à prédominance de lymphocytes a été ainsi observée sous des caries superficielles de l'émail bien que l'intégrité de la dentine ait été histologiquement contrôlée.⁴

À la formation d'un tractus mort, le passage vers la pulpe des toxines, des produits de dégradation du métabolisme bactérien ainsi que des constituants de la matrice dentinaire dépolymérisée, est facilité. Les irritants parmi lesquels ceux énumérés ci-dessus, se comportent sur

le tissu pulpaire comme des antigènes, et, agissant soit d'une manière constante et chronique, soit sous forme de stimuli répétés, devraient être capables de provoquer des réactions immunologiques locales ou systémiques. Leur effet local a été observé chez l'homme bien que la pathogénie du phénomène n'ait pas encore été disséquée chez l'homme ou chez l'animal.

De plus, la voie canalaire est maintenant reconnue comme une voie de sensibilisation systémique.⁶⁻⁷⁻⁸ On a démontré, par exemple, que des antigènes peuvent diffuser dans l'organisme à partir de dents vivantes dont la pulpe a été extirpée, et induire une formation d'anticorps.⁹ La pulpe, altérée par des matériaux d'usage courant en thérapeutique dentaire, permet aussi la diffusion par voie canalaire de composants antigéniques qui induisent la formation d'anticorps systémiques.¹⁰⁻¹¹⁻¹²

L'action systémique induite par des facteurs solubles de la plaque incluant des toxines streptococciques a été, quant à elle, étudiée récemment.¹³⁻¹⁴ Cependant une sensibilisation aux antigènes multiples rencontrés au cours d'une carie dentaire n'a jamais été induite expérimentalement. Notre but a été de créer un modèle utilisant les antigènes rencontrés au cours d'une carie, et qui

SOMMAIRE

Afin d'étudier l'effet sur la pulpe dentaire d'une suspension stérile d'antigènes rencontrés au cours d'une carie dentaire, des lapins ont été sensibilisés au moyen de six séries d'injections cutanées hebdomadaires de 0,5 ml/kg de poids corporel d'une suspension de dentine cariée humaine stérile dans de l'adjuvant complet de Freund. Le contrôle de la sensibilisation a été effectué au jour 40 par un test cutané auriculaire. Au jour 43, un test dentaire déclenchant a été exécuté et une dose d'antigènes spécifiques scellée en topique pulpaire. Les animaux ont été sacrifiés avec leurs témoins à temps échelonnés. Les pulpes incisives ont été prélevées pour étude histologique et histochimique. Le sérum et les ganglions sensibilisés ont été isolés pour tester, après transfert à des receveurs, le type de sensibilisation provoquée.

Chez les animaux sensibilisés, la pulpite s'est révélée plus intense avec une augmentation de la nécrose traumatique, de l'infiltrat sérique et du nombre des macrophages.

Cette pulpite allergique expérimentale aux antigènes rencontrés au cours d'une carie présente de grandes similitudes histologiques avec celle observée au niveau de dents humaines cariées.

ABSTRACT

In order to study the evolution of a pulpitis to a sterile human decayed dentin suspension, rabbits were sensitized with a series of six, weekly subcutaneous injections of 0,5 ml/kg b/w of a sterile human decayed dentin suspension emulsified in complete Freund adjuvant. On day 40, a control cutaneous test was performed on the ear. On day 43, the pulp was challenged and a dose of antigen was sealed as a pulp capping on the incisor pulps. The animals and their control were sacrificed at various times after the pulp challenge and the pulp studied with histological and histochemical methods. The sensitized serum and lymphocytes were isolated for transfer to new receptors in order to evaluate the type of sensitization induced.

In sensitized animals, the pulpitis was more extensive with an increase of the traumatic necrosis, the serous infiltrate and the macrophages number.

The allergic pulpitis described experimentally has many common features with that one observed under human caries.

se rapproche de ce qui devrait se passer chez l'homme au cours de polycaries évolutives. Pour cela, nous avons suscité un terrain immunologiquement conditionné, c'est-à-dire, une hypersensibilité à ces antigènes. À l'aide d'une application déclenchante utilisant en topique pul-

paire une microdose de ces mêmes antigènes, nous avons induit des phénomènes allergiques, visualisés par des lésions dont nous avons suivi la progression au niveau pulpaire.

MATÉRIEL ET MÉTHODES

Préparation de la suspension antigénique

La dentine cariée utilisée pour la sensibilisation provenait de 1,153 dents humaines avec des caries dentinaires de profondeur variable dont la dentine avait été curetée puis gelée dans de l'azote liquide au fur et à mesure des extractions, stockées à -70°C jusqu'à son utilisation, puis mise en suspension dans une solution de saline stérile à 0,85 pour cent au moyen d'un homogénéisateur Polytron. Le surnageant, après décantation, a été stérilisé au moyen d'une bombe au cobalt, de marque Eldorado, et a reçu un peu plus de trois mégarads. Deux tests de stérilité ont été exécutés avant et après passage aux rayons X, sur gélose au sang et sur gélose Sabouraud. La suspension contenait au premier test de 10^6 à 10^7 bactéries par millilitre comprenant 25 colonies aérobies et 80 colonies anaérobies à la dilution 10^4 . Après stérilisation, le nombre d'unités viables était inférieur à dix unités par millilitre, révélant cette suspension comme pratiquement stérile. Cette suspension contenait, de plus, 2,25 milligrammes de protéines par millilitre, évaluées selon la méthode de Lowry.

Sensibilisation des animaux

Des lapins mâles albinos ont été utilisés pour cette expérience. Logés un par cage, ils ont été nourris de croquettes purina et d'eau pure ad libitum renouvelée tous les jours. Leur poids a été relevé deux fois par semaine.

Vingt lapins pesant environ 1,800 kilogrammes au début de l'expérience, ont reçu six séries d'injections sous-cutanées hebdomadaires au niveau du dos de l'extrait antigénique, à la dose de 0,5ml / kg de poids corporel, émulsifié dans de l'adjuvant complet de Freund (ACF).

Vingt lapins témoins ont été traités d'une manière identique, une solution saline à 0,85 pour cent dans de l'ACF remplaçant l'extrait antigénique.

Contrôle de la sensibilisation

Un test cutané auriculaire a été exécuté au jour 40 par injection sous-cutanée de 0,05 millilitre de surnageant antigénique, chez les lapins expérimentaux et leurs témoins. L'oedème et l'érythème subséquents ont été mesurés après une heure, deux heures, quatre heures, huit heures, 12 heures, 24 heures et 48 heures. Au jour 43, un test dentaire a été exécuté.

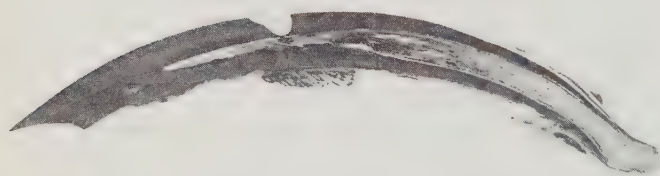
Sous anesthésie générale au moyen de 30 mg/kg de poids corporel de pentobarbital par voie intraveineuse, complétée par une injection locale de 0,5 millilitre de xylocaine à deux pour cent contenant 1:50.000 d'épinéphrine, l'animal a été attaché en décubitus dorsal à un treillis métallique muni d'un microscope stéréoscopique



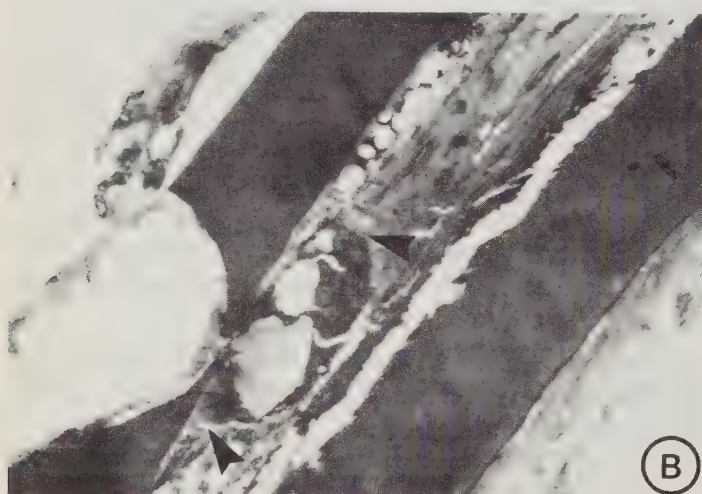
Fig. 1 A. 24 h. après le test cutané, animal témoin. Toute trace d'inflammation a disparu.



Fig. 1 B. 24 h. après le test cutané, animal sensibilisé. L'oedème et l'érythème sont à leur maximum.



(A)



(B)

Fig. 2 A. Allure générale d'une incisive de lapin après trépanation (macroscopie x 3 environ).

Fig. 2 B. Détail de A. La zone nécrotique (entre deux pointes de flèches) et circonscrite, sous le point de trépanation (HPS original x 31 environ).

binoculaire (marque Bausch et Lomb, grossissement de sept à 30 fois). Une incision gingivale a été pratiquée jusqu'au périoste le long du collet et de la face distale des incisives maxillaires et mandibulaires puis le lambeau a été récliné.

Une cavité radiculaire a été taillée au dessous du collet au moyen d'un tour lent muni d'une fraise numéro 5 refroidie par une solution de saline stérile. La dernière pellicule de dentine protégeant la pulpe a été effondrée à l'aide d'un explorateur, et une boulette de coton stérile chargée de 0,001 millilitre de surnageant antigénique a été scellée en topique pulpaire avec un ciment à base d'eugénol et d'oxyde de zinc. Les lambeaux ont été suturés au moyen de fil de soie 0000.

Les animaux témoins ont subi le même traitement que les expérimentaux. De plus, afin de tester l'effet de la trépanation pulpaire seule, 16 lapins ont reçu en topique pulpaire une boulette de coton stérile chargée de solution saline stérile. Sept lapins ont été utilisés comme témoins absolus.

Sacrifice des animaux

Les animaux ont été sacrifiés par exsanguination par groupes de 4, trois heures, 6 heures, 12 heures et 24 heures après le test dentaire, exception faite des groupes expérimentaux et témoins sacrifiés après 24 heures qui

comportaient six animaux. Le sang a été recueilli après canulation de la veine jugulaire et le sérum a été isolé, gelé pour transfert ultérieur. Les ganglions lymphatiques jugulaires et sous-scapulaires ont été prélevés, broyés dans deux millilitres de solution saline stérile et la suspension de lymphocytes utilisée aussitôt pour transfert. Les incisives ont été dégagées de l'os et prélevées. Trois d'entre elles ont été fixées une semaine pour étude histologique dans une solution de formaline à dix pour cent décalcifiées dans un décalcifiant rapide (RDO — Du Page — Kinetic laboratory) et préparées suivant les techniques usuelles pour enrobage dans de la paraffine. Elles ont ensuite été coupées à sept μ m au niveau de la pulpe, colorées selon les méthodes décrites ci-après et soumises à deux types d'évaluation. Tout d'abord, des évaluations quantitatives sur des lames colorées avec hématoxyline-phloxine-safran (HSP) passant par le milieu de la pulpe. La dimension de la cavité, le diamètre de l'exposition pulpaire, l'étendue de la zone de nécrose au point de trépanation et la longueur de l'infiltrat sérique ont été mesurés à l'aide d'un oculaire gradué au 1/10 de millimètre.

De plus, au moyen d'un réticule d'une surface de 0.11 millimètre carré, le nombre de macrophages a été évalué pour trois champs visuels et leur nombre rapporté en millimètre carré. Enfin, les différentes colorations utili-

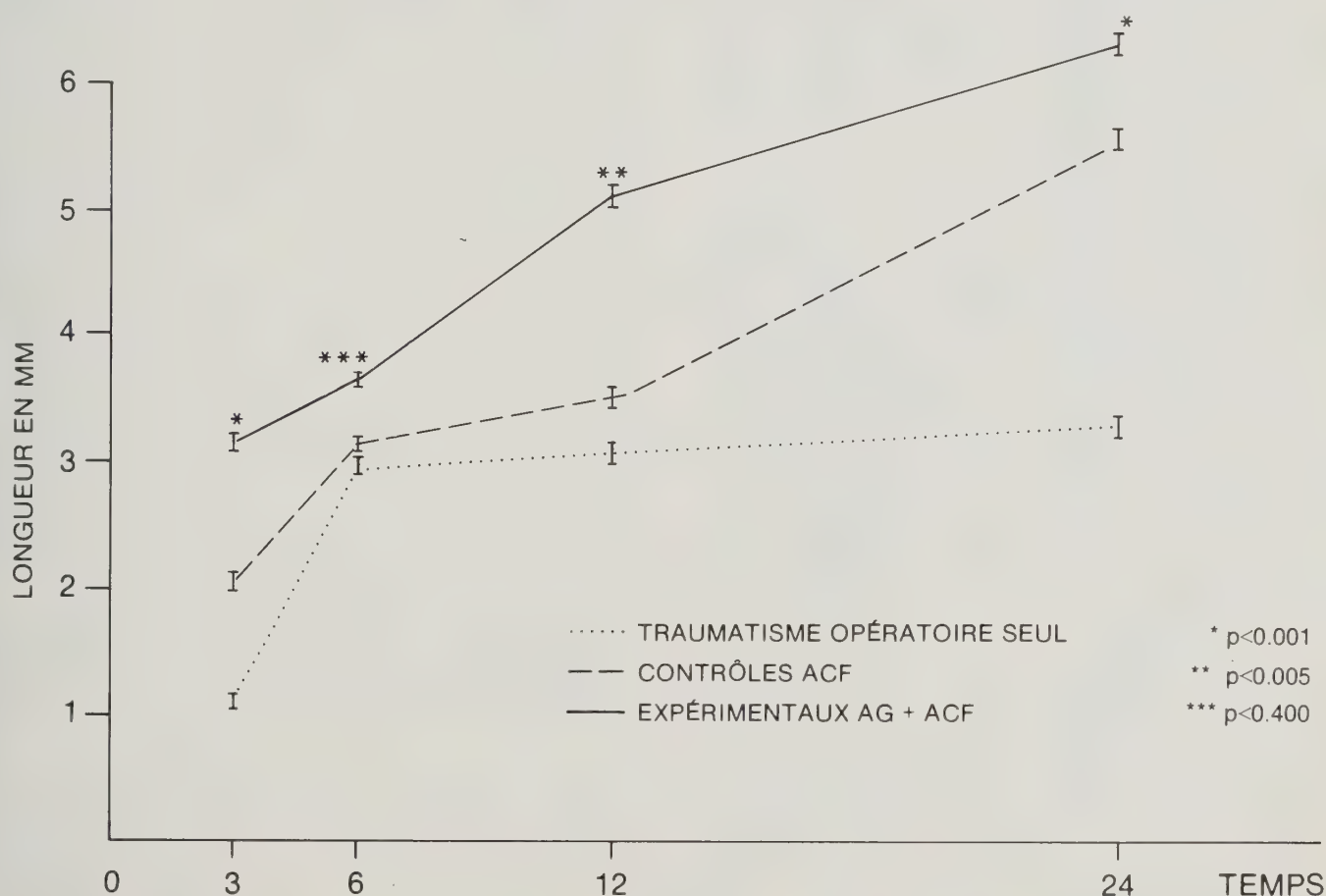


FIGURE 3 Variation de la nécrose au niveau de la pulpe dentaire mesurée en mm. à partir du point de trépanation.

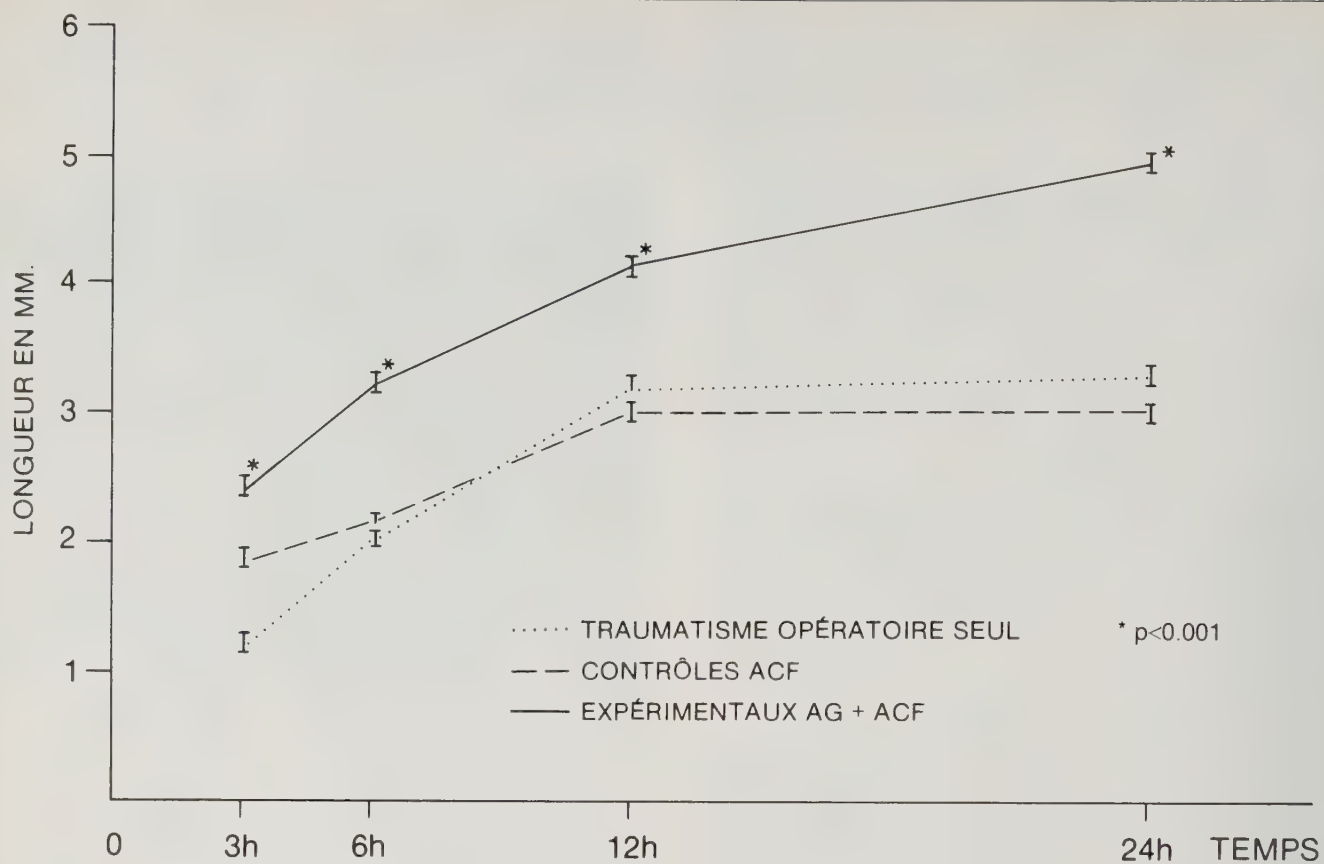


Figure 4 Variation de l'infiltrat sérique au niveau de la pulpe dentaire.

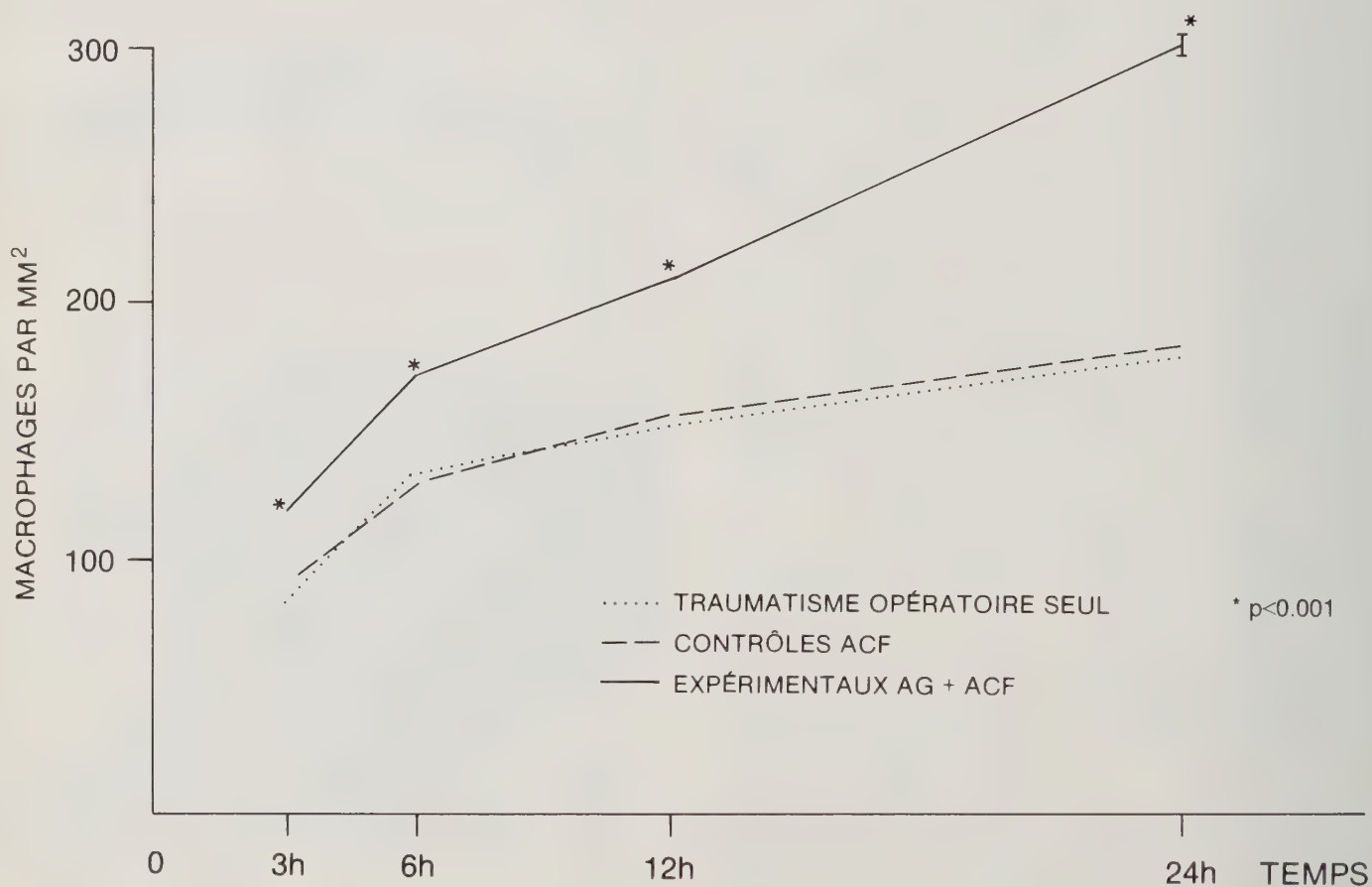


Figure 5 Nombre de macrophages en mm² dans l'infiltrat sérique au niveau de la pulpe dentaire.

sées ont apporté des informations qualitatives: le trichrome de Gomori (dégénérescence cellulaire et collagène); l'acide périodique — réactif de Schiff (PAS) avec et sans digestion par la diastase (hydrates de carbone, en particulier le glycogène); le bleu de toluidine (mucopolysaccharides acides et mastocytes).

La quatrième incisive a été utilisée pour étude histochimique. La pulpe a été isolée après fracture de la dentine, enrobée dans du diaphragme après orientation longitudinale, gelée dans du fréon immergé dans de l'azote liquide puis stockée à -80°C jusqu'à son utilisation. Un certain nombre de réactions enzymatiques ont été mises en évidence incluant la succinodés hydrogénase (SDH; enzyme mitochondriale), la phosphatase alcaline (marquage vasculaire), la phosphatase acide (nécrose cellulaire). Enfin des colorations spécifiques des acides ribonucléiques (ARN), désoxyribonucléique (ADN) (vert de méthyl-pyronine) et des lipides (rouge à l'huile -0) ont été utilisées (16).

Transfert d'hypersensibilité

Afin de tester l'existence d'une sensibilité de type immédiat, un test d'anaphylaxie cutanée passive a été exécuté. Cinq ml/kg de poids de sérum sensibilisé mélangés à 2 ml/kg de poids d'une solution à 0,5 pour cent de bleu Evans dans une solution saline stérile à 0,85 pour cent ont été injectés à six lapins neufs receveurs qui avaient reçu, 45 minutes auparavant, cinq injections intradermiques dorsales de 0,05 millilitre de surnageant antigénique. Les animaux ont été sacrifiés une heure après. Leur peau a été prélevée au niveau du dos et fixée sur une planchette. Les taches de bleu Evans ont été mesurées et comparées avec celle des animaux témoins injectés avec une solution saline à la place du sérum.

D'autre part, afin d'évaluer si l'hypersensibilité provoquée est de type retardé, les ganglions de chaque animal sensibilisé ont été broyés dans deux millilitres de solution saline stérile au moyen d'un broyeur de l'otter. Deux millilitres de la suspension contenant environ quatre millions de lymphocytes vivants par millilitre, reconnus par coloration au bleu Trypan et comptage à l'hémocytomètre, ont été injectés à chaque animal d'un groupe de six dans la veine marginale de l'oreille. Un groupe témoin identique a reçu 2 millilitres de solution saline. Sept heures et 30 minutes plus tard, un test cutané auriculaire de contrôle a été exécuté au moyen de 0,05 millilitre de suspension antigénique, chez les animaux receveurs et leurs témoins.

L'oedème et l'érythème au site d'injection ont été mesurés après trois heures, six heures, 12 heures, 24 heures et 48 heures.

RÉSULTATS

Tout au cours de l'expérience, les animaux ont conservé un état général satisfaisant. Cependant, les ani-

maux expérimentaux ont présenté une courbe de poids un peu inférieure à celle des animaux témoins, en particulier au cours des deux dernières semaines de traitement.

Test cutané de contrôle

Chez les animaux sensibilisés, le test cutané auriculaire s'est révélé dans tous les cas positif. Le site d'injection a présenté un oedème mesurable et important après quatre heures et huit heures. Cet oedème a été diffusé à toute l'oreille en même temps qu'a augmenté l'érythème. Celui-ci a atteint son maximum après 24 heures (fig. 1B) et est resté stable jusqu'à 48 heures. Les animaux témoins ont présenté, par contre, un oedème et un érythème limités avec retour à la normale entre quatre et huit heures (fig. 1A)

Test dentaire

Les cavités dentinaires se sont révélées de taille constante ($1,17 \text{ millimètre} \pm 0,3$) chez tous les groupes d'animaux. Cette observation s'appliquait aussi au point de

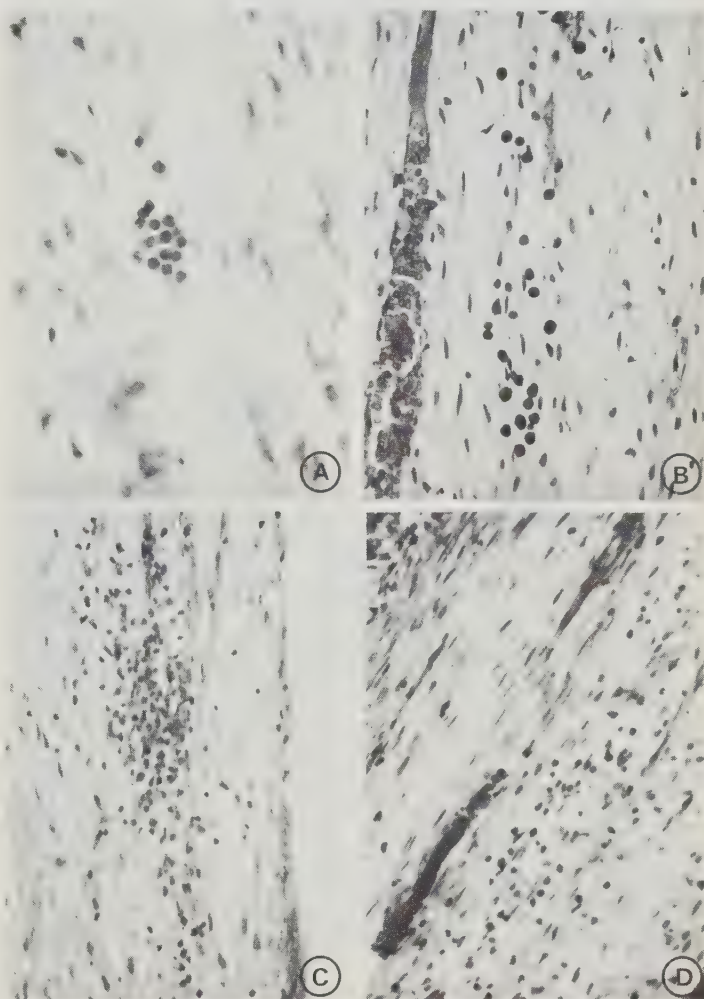


Fig. 6 A-B-C-D Pulpe d'animal sensibilisé (HPS original x 78).

- A. 3h. après le test pulpaire. Discret amas de lymphocytes.
- B. 6h. après le test. Les lymphocytes apparaissent en plus grand nombre.
- C. Après 24h., les lymphocytes sont groupés en amas péri-vasculaires...
- D. ... ou dispersés dans le mésenchyme pulpaire.

trépanation pulpaire ($0,3 \text{ millimètre} \pm 0,05$).

Au niveau des trois groupes d'animaux ayant subi un traitement dentaire, la pulpite induite a adopté un schéma général superposable. Dans tous les cas, on a pu observer sous le point de trépanation une zone de nécrose

limitée. Adjacente à cette zone, la pulpe présentait un infiltrat sérique abondant contenant des macrophages. En direction de l'apex, la pulpe était ensuite, suivant les groupes, soit saine chez les témoins, soit encore enflammée chez les expérimentaux. La figure 2 illustre l'allure adoptée par la pulpite au niveau de la trépanation. Cependant l'intensité de l'inflammation et les dimensions des différentes zones ont varié suivant les groupes.

Les animaux témoins ont présenté en effet une pulpite modérée et localisée au tiers coronaire laissant saine la pulpe au delà de l'infiltrat sérique. Les animaux sensibilisés ont, par contre, réagi par une pulpite plus intense et plus extensive et, de plus, qualitativement spécifique.

Trois heures après le test dentaire, la zone nécrotique est apparue plus importante qu'au niveau des deux groupes témoins. Elle s'est intensifiée d'une manière proportionnelle avec le temps et a présenté un maximum à 24 heures (fig. 3). D'une manière comparable, l'infiltrat sérique était plus abondant au niveau des animaux sensibilisés chez lesquels il a suivi une progression identique (fig. 4). Les macrophages ont aussi été comptés en plus grand nombre chez ces lapins, particulièrement

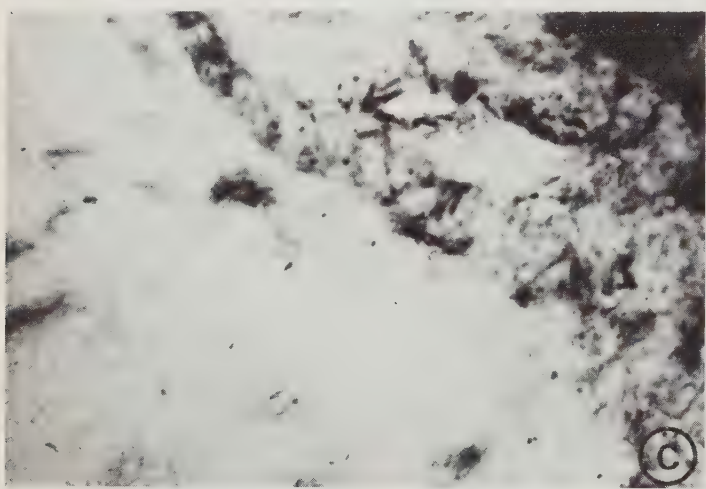
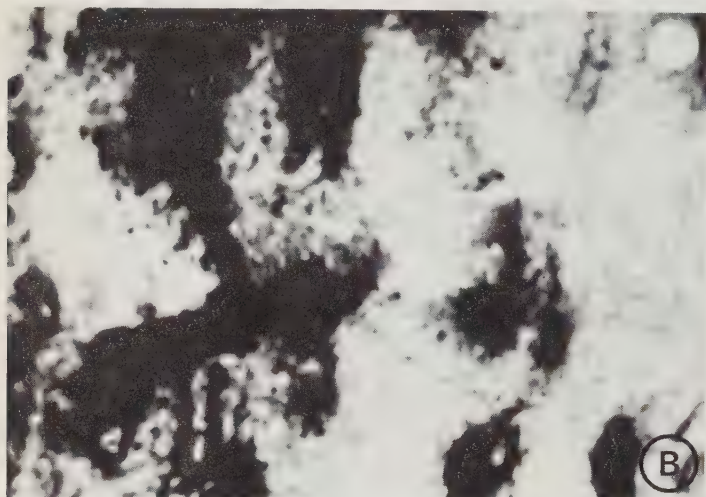
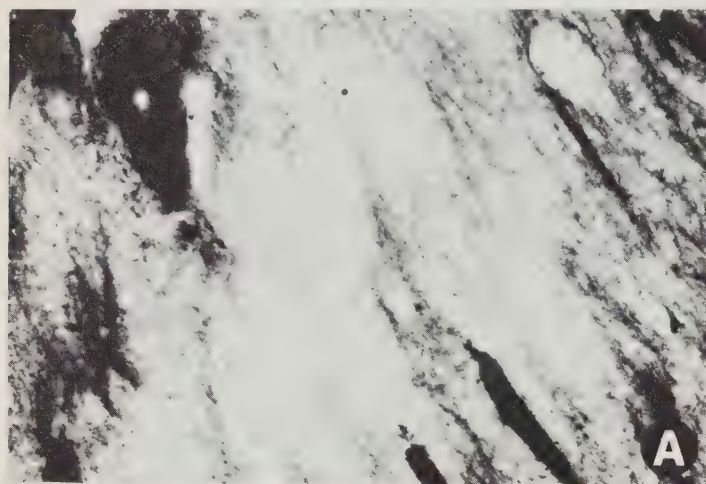


Fig. 7 A-B-C Mise en évidence de la phosphatase alcaline (méthode de Gomori) (original x 78 environ).

Fig. 7 A. Témoin absolu. Les vaisseaux sont riches en phosphatase alcaline.

Fig. 7 B. Animal sensibilisé. Après 6 h., les parois sont plus réactives.

Fig. 7 C. Animal sensibilisé. Après 24 h., de nombreuses parois ont perdu leur réactivité.



Fig. 8 Mise en évidence de la phosphatase acide. (original x 78 environ). Animal sensibilisé, après 24 h. Ces foyers positifs (flèche) ont été observés dans le mésenchyme pulpaire après 6 h.

24 heures après le test dentaire (fig. 5).

Les cellules inflammatoires de type lymphocytaire ont été observées déjà dès trois heures après le test en infiltrats périvasculaires discrets (fig. 6-A). Ces lymphocytes sont devenus plus nombreux jusqu'à 24 heures. À ce temps, ainsi qu'à six heures (fig. 6-B) et à 12 heures, on les a observés dans l'infiltrat sérique ou à n'importe quel endroit du mésenchyme pulpaire. Ils étaient tantôt groupés en amas denses (fig. 6-C), tantôt dispersés à travers la pulpe (fig. 6-D). De tels infiltrats n'ont jamais été retrouvés au niveau des pulpes des animaux des deux groupes témoins.

Les différentes colorations histologiques ainsi que les colorations histochimiques utilisées pour la mise en évidence de certaines réactions enzymatiques ont permis de suivre l'influence des changements inflammatoires sur la réactivité cellulaire et la séquence de ces modifications. La méthode de prélèvement pulpaire employée pour l'étude histochimique, si elle élimine la cavité expérimentale en même temps que la paroi dentinaire, laisse toutefois subsister la zone nécrosée clairement identifiable avec n'importe quelle coloration, et qui permet ainsi une orientation aisée.

Les animaux sensibilisés ont tous réagi d'une manière comparable. Leur réponse était homogène et toujours supérieure à celle des groupes témoins qui, lorsqu'ils ont montré des changements, en ont présenté de discrets, limités à la zone de l'infiltrat sérique.

Dès trois heures après le test dentaire, chez les animaux sensibilisés et les animaux témoins, quelques odon-

toblastes et fibroblastes au niveau de l'infiltrat sérique étaient en train de se nécroser. Ces lésions se sont avérées plus nombreuses avec le temps, spécialement chez les animaux sensibilisés.

Les vaisseaux pulpaire ont présenté des échanges énergétiques parfois très marqués chez les animaux sensibilisés. En effet, certains endothéliums étaient très PAS +, sauf après passage à la diastase. Ils contenaient donc beaucoup de glycogène alors que d'autres parois étaient riches en hydrates de carbone d'un type différent. La plupart des vaisseaux, à ce temps, ont démontré une réaction positive à la mise en évidence de la phosphatase alcaline. D'autres vaisseaux, par contre, étaient au

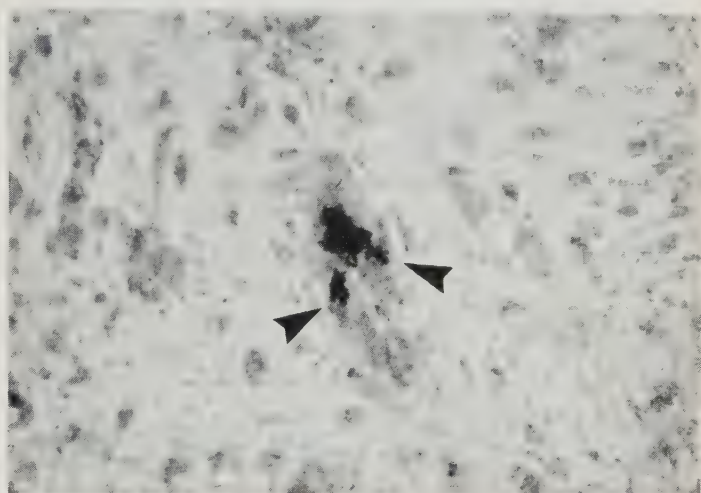


Fig. 9 Animal sensibilisé. Après 12 h., des foyers de dégénérescence lipidique (flèche) s'observent dans le mésenchyme pulpaire (col rouge à l'huile 0 x 312 environ).

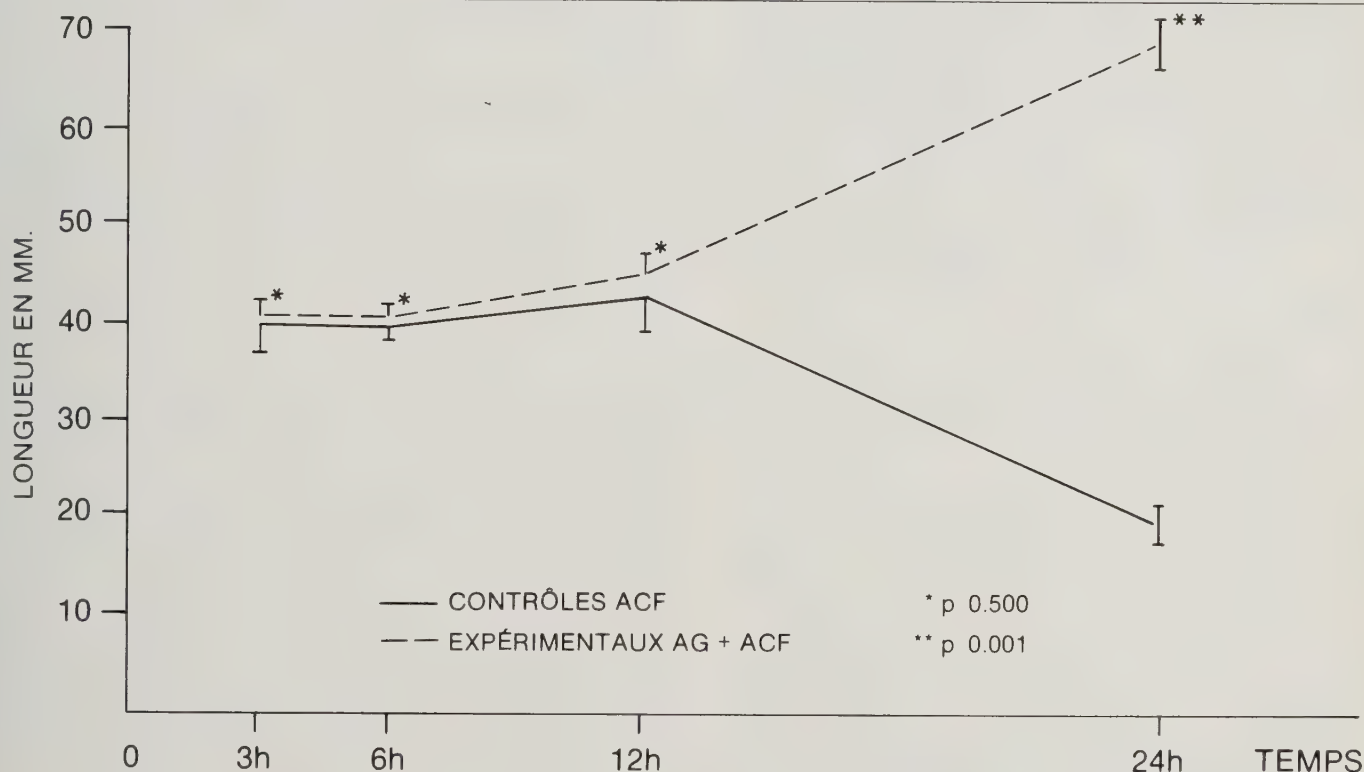


Figure 10 Mesure de l'érythème auriculaire (en mm) après transfert de broyat ganglionnaire.

même moment tout à fait privés de glycogène. On a observé aussi, dès trois heures, une perte des mucopolysaccharides acides objectivée par une perte focale de la coloration au bleu de toluidine au niveau de zones disséminées dans tout le mésenchyme pulpaire. Seul l'infiltrat sérique présentait quelques petites zones négatives chez les témoins. On peut donc en conclure que la substance fondamentale était focalement dépolymérisée chez les animaux expérimentaux. Cette dépolymérisation s'est associée à une perte focale d'ARN, révélée par le vert de méthyl-pyronine, dans la pulpe enflammée.

À six heures, on a observé une atteinte mitochondriale avec une perte focale de la réactivité de la succinodéshydrogénase au niveau de la pulpe enflammée. Dans la zone d'œdème tissulaire, une augmentation par places de l'ARN, en particulier au niveau de la ligne des odontoblastes, ainsi qu'une augmentation focale d'ADN au niveau de certaines cellules de la pulpe enflammée, étaient notées. Cette augmentation traduit un accroissement de la synthèse cellulaire ou peut être interprétée comme une tentative de réparation odontoblastique.

À ce temps, les vaisseaux ont démontré une perte du glycogène bien que la démonstration de la phosphatase alcaline soit restée très positive jusqu'à l'apex (fig. 7-A et B).

De petits foyers de nécrose focale, positifs à la mise en évidence de la phosphatase acide étaient disséminés dans le mésenchyme pulpaire. Ces foyers n'ont été retrouvés que chez les animaux sensibilisés et indiquent l'action intensive des enzymes lysosomales (fig. 8).

Après 12 heures, la déficience mitochondriale s'est intensifiée. La présence de foyers ARN positifs était toujours remarquable. On pouvait noter, de plus, une intensification du nombre des foyers nécrotiques positifs à la mise en évidence de la phosphatase acide. De petites zones d'accumulation lipidique étaient positives au Rouge-à-l'huile-O (fig. 9).

Enfin, les parois vasculaires avaient pour la plupart perdu leur réactivité à la mise en évidence de la phosphatase alcaline.

Après 24 heures, les lésions se sont révélées à leur intensité maximum. Les insuffisances mitochondriales se sont intensifiées, ainsi que l'accumulation des lipides intracytoplasmiques. Les parois vasculaires étaient pratiquement dépourvues de glycogène et de phosphatase alcaline (fig. 7-C). Les zones phosphatase acide positives et celles de dégénérescence lipidique ont été observées plus nombreuses. On a relevé, de plus, à ce moment, une perte focale de l'ADN et de l'ARN dans l'ensemble du mésenchyme pulpaire, bien que certains segments d'odontoblastes aient montré encore à ce temps une certaine réactivité.

Transferts d'hypersensibilité

Parmi les six lapins receveurs de sérum sensibilisé, deux seulement ont présenté une réaction très légère-

ment significative par rapport aux animaux témoins ($p < 0,01$).

Au moment du test cutané de contrôle, les animaux transférés avec une suspension de lymphocytes sensibilisés ont réagi dans les premières heures d'une manière comparable aux animaux témoins. Après 12 heures, cependant, l'érythème auriculaire était plus important que chez les témoins et atteignait un maximum d'intensité et d'extension après 24 heures (fig. 10). Malgré de légères variations individuelles, tous les lapins transférés ont présenté un test cutané positif.

DISCUSSION

Nous avons induit une pulpite allergique, chez des animaux sensibilisés, venant se superposer à une pulpite traumatique d'intensité négligeable. L'inflammation, objectivée par la quantité de l'infiltrat sérique et le nombre de macrophages, est superposable chez les deux groupes témoins. Cependant la zone de nécrose au point de trépanation est légèrement plus étendue après 24 heures chez les animaux témoins utilisant en application pulpaire la suspension antigénique, que chez ceux utilisés pour l'étude du traumatisme seul. Il est possible que les rares microorganismes encore vivants dans la suspension antigénique aient produit une réaction plus intense au point de contact avec la pulpe, mais insuffisante toutefois pour produire des réactions vasculaires notables. Il n'y a donc pas d'effet synergique entre l'irritation bactérienne envisagée dans ce cas et l'effet du traumatisme dentaire seul. Les animaux témoins ont réagi d'une manière comparable au niveau des deux groupes, tant au point de vue de l'intensité de la réaction que de sa qualité.

La pulpite allergique, par contre, apparaît dès son début plus intense et se déroule suivant un schéma particulier identique chez tous les animaux. Les odontoblastes présentent des lésions précoces quelque soit l'origine de leur irritation. Après une période de latence de six heures, ces cellules vont tenter une réparation comme le prouve la synthèse accrue de leur ARN. Cette défense odontoblastique se retrouve encore après 24 heures, moment où l'inflammation atteint son maximum. Il est remarquable que les mitochondries restent fonctionnelles pendant six heures avant de présenter des défaillances de la respiration cellulaire. Encore cette défaillance ne se présente-t-elle que par place, et, même après 24 heures, elle n'intéresse pas la totalité de la pulpe.

Cette perturbation de la respiration mitochondriale va entraîner une accumulation focale de lipides qui s'observe à partir de 12 heures. C'est cependant un peu plus tôt, à six heures, qu'apparaissent les premiers foyers de nécrose cellulaire intrapulpaires phosphatase acide positifs. Nous constatons donc ici deux types de lésions: une lésion aiguë avec mort cellulaire rapide, et une lésion plus lente par intoxication cellulaire. Ce sont ces foyers d'accumulation lipidique qui induisent, dans la

pratique, ultérieurement des calcifications dystrophiques. C'est très précocement par contre que s'observent des modifications vasculaires. Presque tous les vaisseaux ont gardé leur intégrité après trois heures. La paroi montre même des signes accrus d'activité: phosphatase alcaline très positive et surcharge en glycogène. Cependant, la réserve en glycogène s'épuise après six heures et, après 12 heures jusqu'à 24 heures, les vaisseaux démontrent une perte de leur capacité d'hydrolyse par diminution de leur contenu en phosphatase alcaline.

C'est aussi dès trois heures que débute la dépolymérisation de la substance fondamentale associée à une perte momentanée de l'activité de l'ARN. En effet, après six heures et 12 heures, l'ARN aussi bien que l'ADN redeviennent temporairement plus abondants, signalant une tentative de réparation jusqu'à 24 heures où l'inflammation, qui est à son maximum, s'accompagne d'une diminution focale de leur réactivité dans l'ensemble du mésenchyme pulpaire.

Cette pulpite de nature allergique, induite expérimentalement chez des animaux sensibilisés aux antigènes multiples, incluant des antigènes bactériens, rencontrés au cours de la carie dentaire, est aussi entretenue par les produits de dégradation issus des cellules pulpaires elles-mêmes qui, en se lysant, contribuent à définir l'inflammation.

La sensibilisation aux antigènes rencontrés au cours d'une carie dentaire a été effective chez tous les animaux puisque tous ont réagi au test cutané auriculaire et que des lésions pulpaires ont été constamment observées après le test déclenchant. L'hypersensibilisation provoquée semblerait plutôt de type retardé. En effet, nous n'avons constaté qu'une réaction discrète à la mise en évidence d'une anaphylaxie cutanée passive, mais tous les receveurs ont réagi au test cutané après injections de lymphocytes sensibilisés.

Ces étapes évolutives des premières heures d'une pulpite ont été décrites ici dans le cadre rigide d'une expérimentation animale. Les lois de la biologie devraient nous autoriser cependant à extrapoler à l'homme l'essentiel de nos observations. En effet, la pulpite allergique que nous avons induite chez l'animal est un type de pulpite que l'on devrait retrouver communément chez le patient à dentition négligée. Il est concevable que ce patient puisse se sensibiliser aux antigènes de ses propres caries, peut-être par la voie de lésions dentaires multiples. Une dose déclenchante d'antigènes arrivant au contact pulpaire induira des réactions immunopathologiques qui devraient à un moment quelconque du phénomène inflammatoire, avoir des points communs avec la pulpite allergique que nous venons de décrire.

Ces observations devront être affinées par l'analyse de l'action d'antigènes plus strictement définis, responsables des pulpites au cours de carie dentaire chez l'homme.

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REMERCIEMENTS:

Le docteur R. Mathieu (Hôpital Maisonneuve de Montréal) qui a pris en charge la stérilisation de l'extrait antigénique, M. V.W. Adamkiewicz dans le laboratoire duquel M.D. Morency a effectué les tests de stérilité, et madame S. Zalzal pour son aide technique précieuse, doivent être ici remerciés.

Announcements

We urge readers to confirm meeting dates with the contact listed with each announcement.

Canada

Canadian Dental Association, 1980 National Convention, Halifax, Nova Scotia, July 13-16, 1980. Contact: Dr. T.D. Ingham, Nova Scotia Dental Association, P.O. Box 604, Halifax, N.S. B3J 2R7.

L'Association Dentaire Canadienne, Congrès national 1980, Halifax, Nouvelle-Écosse, 13-16 juillet 1980. Pour renseignements: Dr. T.D. Ingham, Association Dentaire de la Nouvelle-Écosse, B.P. 604, Halifax, N.-É. B3J 2R7.

April

Ontario Dental Association 113th Annual Spring Meeting. The Sheraton Centre, Toronto, Ontario, April 27-30, 1980. Contact: Mrs. W.C. Durham, 234 St. George Street, Toronto, Ontario M5R 2P1.

May

Canadian Academy of Periodontology Annual Meeting, Chateau Champlain Hotel, Montreal, Que., May 16-19, 1980. Contact: Dr. J.P. Masson, Drummond Medical Building, 1414 rue Drummond, Suite 1110, Montreal, Que. H3G 1W1.

Annual Convention of the College of Dental Surgeons of Saskatchewan, Yorkton, Saskatchewan, May 22-24, 1980. Contact: Dr. H.J. Large, 10 Dunlop Block, Yorkton, Sask. S3N 0K4.

British Columbia College of Dental Surgeons 1980 Convention, Hyatt Regency Hotel, Vancouver, May 25-28, 1980. For further information, please contact: Venue West Ltd., 1704 — 1200 Alberni Street, Vancouver, B.C. V6E 1A6, phone: (604) 681-5226.

Les journées dentaires du Québec, Queen

Elizabeth Hotel, Montreal, Quebec, May 25-29, 1980. Contact: Doctor Morton Lang, 5253 Décarie, Suite 210, Montreal, P.Q. H3W 3C3.

July

Canadian Academy of Restorative Dentistry Annual Scientific Sessions, Chateau Halifax, Halifax, Nova Scotia, July 11-12, 1980. Contact: Dr. D.C.T. MacIntosh, Scientific Chairman, 200 Medical Arts Building, 5880 Spring Garden Rd., Halifax, N.S. B3H 1Y1.

Canadian Academy of Prosthodontics, Halifax, Nova Scotia, July 11-12, 1980. Contact: Dr. B.M. Jackson, secretary-treasurer, 22-22 Water St. South, Kitchener, Ont. N2G 4K4.

Canadian Academy of Endodontics 1980 Annual Meeting, Chateau Halifax, Halifax, Nova Scotia, July 12-13, 1980. Contact: Dr. Tom Larder, 5991 Spring Garden Road, Halifax, N.S. B3H 1Y6.

Canadian Dental Hygienists' Association, 1980 Convention, Halifax, Nova Scotia, July 14-16, 1980. Contact: Mrs. Kim McGrail, 3 Beech Street, Bedford N.S. B4A 1T1.

1980 AHA/CHA Convention & Exhibition, Montreal, Quebec. Convention headquarters will be Queen Elizabeth Hotel for C.H.A. and headquarters for A.H.A. will be Place Bonaventure & Chateau Champlain. Exhibition headquarters will be Place Bonaventure, July 28-31, 1980. Contact Mr. Paul Brown or Mrs. Joan Roche, phone: (613) 238-8005.

The 1980 Annual Meeting & Scientific Sessions of the Canadian Association of Orthodontists, Chateau Halifax, Halifax, Nova Scotia, July 13-16, 1980. Contact: Dr. Wayne Barro, 599 Portland Street, Dartmouth, N.S. V2W 2M5. Phone: (902) 434-2177.

September

Canadian Dental Association Board of Governors Meeting, Four Seasons Hotel, Ottawa, September 26-27, 1980.

The Canadian Association of Oral and Maxillofacial Surgeons 1980 Clinical Symposium on Current Concepts in

Temporo Mandibular Joint: Diagnosis and Management, Harbour Castle Hilton, Toronto, Ontario, November 1-3, 1980. Contact: Dr. S.J. Levitz, #212—77 Queensway West, Mississauga, Ont. L5B 1B7.

November

Toronto Academy of Dentistry, 1980 Winter Clinic, Royal York Hotel, Toronto, Thursday November 27, 1980. Contact: Academy of Dentistry, 234 St. George Street, Toronto, M5R 2P2. Phone: (416) 967-5649.

International

April

Latin American Confederation of Dental Prosthetics — 11th Congress, Barcelona, Spain, April, 1980. Contact: Julio Medrano Duaso, presidente, Asociacion de Protésicos Dentales de Catalunya, Avda. de Roma 2-4, Barcelona 15, Spain.

First World Biomaterials Congress, Baden, near Vienna, Austria, April 8-12, 1980. Contact: Mrs. E. Maurer, Medical Academy of Vienna, Alser Strasse 4, A-1090 Vienna, Austria.

International Congress of the Panamerican Association of Periodontology, San Juan, Puerto Rico, April 15-20, 1980. Contact: Benjamin Vargas, G.P.O. Box 70175, San Juan, Puerto Rico 00936.

The American Association of Endodontists, is instituting a career opportunity exchange and registry at their annual meeting in Los Angeles, California, April 16-20, 1980. Endodontic students and dentists who are seeking career opportunities in this field or those seeking endodontists for employment or association in offices or institutions may write for information to: Dr. Nguyen T. Nguyen, University of California San

Francisco, School of Dentistry, Room 631-C, San Francisco, CA 94143, U.S.A.

American Cancer Society Inc., Chicago, U.S.A., April 17-18, 1980. Contact: Dr. Nicholas G. Battiglieri, 777 Third Ave., New York, NY 10017, U.S.A.

Sixth Annual Meeting of the French Society of Periodontology, Monte Carlo, Monaco, April 29-May 1, 1980. Contact: Société Française de Parodontologie, 57 Rue d'Amsterdam, 75008 Paris.

May

Schweizerische Zahnärzte-Gesellschaft (SSO), Interlaken, Switzerland, May, 1980. Contact: Franz Plattner, Chefredaktor des Bulletins, Ottobach 21, 7000 Chur, Switzerland.

Alabama Implant Congress VI, Birmingham, Alabama, May 1-4, 1980. Contact: Dr. H. Ford Turner, Alabama Implant Study Group, P.O. Box 4682, Birmingham, AL 35206, U.S.A.

Northern California Society of Oral and Maxillofacial Surgeons, Reno, Nevada, May 11-15, 1980. Contact: Mr. Edwin E. Pears, 2809 G. Street, Merced, CA 95340, U.S.A.

American Academy of Oral Pathology, San Antonio, Texas, U.S.A., May 12-16, 1980. Contact: Dr. Arthur Miller, School of Dentistry, Temple University, 3223 N. Broad St., Philadelphia, PA 19140, U.S.A.

Academy of Denture Prosthetics, Daytona Beach, Florida, U.S.A., May 18-23, 1980. Contact: Dr. William R. Laney, Dept. of Dentistry, Mayo Clinic, Rochester, MN 55901, U.S.A.

American Academy of Craniomandibular Disorders, Chicago, May 22-24, 1980. Contact: Dr. William Danzig, 2021 Ygnacio Valley Road, Walnut Creek, CA 94598, U.S.A.

Tenth International Meeting on Dental Implants and Transplants, Bologna, Italy, May 23-25, 1980. Contact: Professor G. Muratori, Gruppo Italiano Studi Implantari Sezione Congressi, Via S. Gervasio 1, I-40121, Bologna, Italy.

American Academy of Pedodontics, San Francisco, California, U.S.A., May 24-27, 1980. Contact: Miss Merle C.

Hunter, 211 E. Chicago Ave., Chicago, IL 60611, U.S.A.

June

Eighth International Conference on Oral Biology, Tokyo, Japan, June 1-3, 1980.

Its theme will be: Oral Disease Prevention — its implications and applications. An interesting study tour program in Japan, China and Thailand is being arranged in connection with the conference. Contact: Dr. George S. Beagrie, University of British Columbia, Faculty of Dentistry, 2075 Westbrook Place, Vancouver, B.C. V6T 1W5.

The 58th General Session of the International Association for Dental Re-

search, Royal Hotel, Osaka, Japan, June 5-8, 1980. Contact: Yojiro Kawamura, chairman I.A.D.R. Organizing Committee, School of Dentistry, Osaka University, 4-3-48 Nakanoshima, Kita-ku, Osaka, Japan.

Symposium on the Prevention in Stomatology, Dolny Kubin, Czechoslovakia, June 5-7, 1980. Contact: Prim. MUDr. V. Tažandlák, Dúnz — Dolny Kubin, Nemocnična ul. 4, 026 14 Dolný Kubin, Czechoslovakia.

58th IADR Congress, Osaka, Japan, June 5-8, 1980. Contact: Dr. Yojiro Kawamura, Osaka University Dental School, 32 Joan-cho, Kitaku, Osaka, 530 Japan.

International Congress on Implantology and Biomaterials in Stomatology, Kyoto, Japan, June 9-10, 1980. Contact: Prof. H. Kawahara, International Congress of Implantology and Biomaterials in Stomatology, c/o Kyoto International Conference Hall, Takaragaike, Sakyo-ku, Kyoto 606, Japan.

Obituaries/ Nécrologies

MCGINNIS, James Archibald (Archie), graduated University of Toronto, 1923. Died January 11 this year. He practised in Battleford, Saskatchewan from 1923 to 1930 and in Edmonton, Alberta from 1930 until his retirement in 1978.

MACDONALD, George Miller, died May 28, 1979. Graduated University of Southern California 1929 and practised in Vancouver, British Columbia until retirement in 1970.

MACKAY, Bruce Wallace, died January 8, 1980. Graduated University of Alberta Faculty of Dentistry, 1945 and served in the Canadian Dental Corps for one year. Practised in Vancouver, British Columbia and Salt Spring Island.

TANGUAY, Roger, décédé le 29 décembre 1979, à l'âge de 43 ans. Après avoir exercé sa profession plusieurs années à Lévis, Québec, il occupa le poste de professeur à l'École de médecine dentaire de l'université Laval. Compensez vos envois de fleurs par des dons: Fond Émile Beaulieu (pour la recherche dentaire), École de médecine dentaire, Université Laval ou, Le secours aux lépreux, Montréal, Québec.

PETERS, Harry H., graduated Dalhousie University Faculty of Dentistry, 1931. Died December, 1979. Dr. Peters was executive director registrar of the New Brunswick Dental Society from 1971 to 1975. He served in the Canadian Dental Corps during World War II. Dr. Peters was also former Saint John councillor and deputy mayor.

The Marin County Dental Society, French Polynesia (Four Islands), June 15-17, 1980. Contact: Dr. James H. McCray, 231-B Flamingo Road, Mill Valley, CA 94941, U.S.A.

Seventh International Conference on Oral Surgery, Trinity College, Dublin, Ireland, June 23-26, 1980. Contact: Professor I.A. Findlay, Chairman, Organizing Committee, Seventh International Conference on Oral Surgery, 12 Pembroke Park, Dublin 4, Ireland.

86th Meeting of the American Dental Society of Europe, Stratford-upon-Avon Hilton, Stratford-upon-Avon, England, June 24-28, 1980. Contact: The Secretary, Dr. Brian J. Parkins, 57 Portland Place, London W1N 3AH, England.

Fifth International Congress of Dento-Maxillo-Facial Radiology, Portland, Oregon, U.S.A., June 28-July 2, 1980. Contact: Dr. Walter H. Fox, 1400 Mill Street, Eugene, OR 97401, U.S.A.

July

Fifth Congress of the International Association of Dentistry for the Handicapped, Jerusalem, July 6-11, 1980. Contact: Secretariat, Fifth Congress of the International Association of Dentistry for the Handicapped, P.O. Box 3473, Tel Aviv, Israel.

British Dental Association Centenary Meeting, London, England, July 10-11, 1980. Contact: R.B. Allen, secretary, British Dental Association, 64 Wimpole Street, London W1M 8A1, England.

Israel Dental Association's International Meeting, Tel Aviv, Israel, July 13-19, 1980. Contact: Dr. S. Perlmutter, Israel Dental Association, 49 Bar-Kochba Street, Tel Aviv, Israel.

Fourth International Symposium on the Prevention & Detection of Cancer, Wembley Conference Centre, London, England, July 26-31, 1980. Contact: Fourth International Symposium on Prevention & Detection of Cancer, Room 1909, 375 Park Avenue, New York, N.Y. 10022, U.S.A.

August

New Zealand Dental Association Jubilee Conference 1905-1980, Dunedin, New Zealand, August 25-29, 1980. Contact: The Conference Secretary, P.O. Box 647, Dunedin, New Zealand.

September

Fédération Dentaire Internationale, 68th Annual World Dental Congress, Hamburg, Germany, September 2-7, 1980. Contact: Dr. R. Braun, Bundesverband der Deutschen Zahnärzte, Universitätsstrasse 73, 5000 Köln 41, Germany.

International Association for Orthodontics, Reno, Nevada, September 3-7, 1980. Contact: Ms. Joanna Carey, 645 N. Michigan Avenue, Chicago, IL 60611, U.S.A.

American Association of Oral and Maxillofacial Surgeons, San Francisco, September 5-9, 1980. Contact: Mr. Bernard J. Degen II, Suite 930, 211 East Chicago Avenue, Chicago, IL 60611, U.S.A.

Federation of Prosthodontic Organizations, San Francisco, September 5-9, 1980. Contact: Mr. Eric Bishop, Suite 1636, 211 East Chicago Avenue, Chicago, IL 60611, U.S.A.

Federation of Prosthodontic Organizations, Chicago, Illinois, U.S.A., September 15-16, 1980. Contact: Mr. Eric M. Bishop, Suite 1636, 211 East Chicago Ave., Chicago, IL 60611, U.S.A.

Genoa International Fair — 10th Exponential, Genoa, September 24-27, 1980. Contact: Fiera di Genova, P. le J.F. Kennedy, 16129 Genoa.

American Society of Psychosomatic Dentistry and Medicine, San Francisco, September 25-28, 1980. Contact: Mr. Leo Wollman, 2802 Mermaid Avenue, Brooklyn, NY 11224, U.S.A.

October

Third National Convention and III International Conference of Oral Health, Lima, Peru, October 1-4, 1980. Contact: Dr. Gilberto Dominguez, Av. Benavides 264-902, Lima 18, Peru, South America.

International College of Dentists Annual Session, New Orleans Hilton, October 8-13, 1980. The U.S.A. Section Convocation and Banquet, Saturday October 11, 1980. Reservations may be made by sending a cheque for \$25 per person to the International College of Dentists, 3138 Commodore

Plaza, Miami, FL 33133, U.S.A.

American Society of Dentistry for Children, New Orleans, October 9-11, 1980. Contact: Ms. Dorothy J. McCord, Suite 920, 211 East Chicago Avenue, Chicago IL 60611, U.S.A.

Penurie de dentistes dans les T.N.O.

"Il y a une grave pénurie de dentistes dans les Territoires du Nord-Ouest," a déclaré le Dr Clyde Covit, président de l'Association dentaire canadienne. "Dans la seule région d'Inuvik, il n'y a aucun praticien."

Selon le Dr Covit, il y a là une tâche intéressante et un défi. C'est une occasion pour le praticien dentaire de travailler très près de la population indigène.

Des postes à temps complet et à temps partiel sont également disponibles. Les Territoires du Nord-Ouest sont divisés en quatre régions de services dentaires et médicaux: Inuvik, Mackenzie, Keewatin et Baffin.

Certaines régions ont besoin d'être servies durant une courte durée et le gouvernement fédéral est prêt à engager en tout temps des dentistes pour des périodes minimums de deux semaines.

Pour obtenir plus de renseignements sur l'échelle des salaires et sur les autres avantages qui comprennent le logement, des congés et des allocations d'isolement, on vous prie de vous adresser au Dr J.D. Martin, Directeur régional pour les Territoires du Nord-Ouest, Services médicaux, Santé et Bien-être Canada, Edifice Jeanne Mance, Salle 1962, Tunney's Pasture, Ottawa, Ontario, K1A 0L3.

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BRITISH COLUMBIA — Southern Interior. Large practice for sale with two associates (one full time, one part time), hygienist, etc. Grossing in area of \$450,000 per year. Only good management and financially minded dentists need apply. Present owner wishes to retire at age 40. Excellent terms to right party. Also, an excellent house to be considered. This is an opportunity of a lifetime. Are you wasting your time and energy trying to build a practice? Wasted time is costing you valuable income. Reply to CDA Box Number 1915.

BRITISH COLUMBIA — **Revelstoke**. Lucrative, preventive family practice for sale/lease; nestled in the scenic Columbia River Valley of eastern British Columbia. Modern efficient Cox floor plan suitable for one or two dentists with room for expansion. Excellent financial opportunity in thriving environment with unlimited recreation. Phone collect: (604) 837-5149.

BRITISH COLUMBIA — **Vancouver**. Two units ranging in size from 600 to 1,235 sq. ft. are available in a modern and well located medical building. For further information please ask for Mr. J.G. Swallow, Royal Trust Corporation of Canada. Phone: (604) 668-5293.

ALBERTA — **Central**. Large preventive family practice for sale or lease. Well-established office with three operatories, central suction, nitrous oxide and air-conditioning. Present staff wishes to remain. Hospital privileges available. Excellent hunting and fishing nearby. Owner retiring because of ill health. Reply to CDA Box Number 1949.

ALBERTA — Medical Dental Centre has office space for lease in Spruce Grove (pop. 9,000), 12 miles west of Edmonton. Seven doctor clinic and pharmacy already leased. Ideal location for dentist(s). Available: Summer 1980. Reply to: Dr. Somani, Box 870, Spruce Grove, Alta. T0E 2C0. Phone: (403) 962-2606.

ALBERTA — **Pincher Creek**. Practice for sale, or associate wanted. Recently renovated building. Five operatories plus hygiene suite. All new equipment; commercial lab in building. Presently three dentists and hygienist, one dentist leaving in May. Four day week. Two hours from Calgary; thirty minutes from skiing. Phone: (403) 627-3290 collect, or after 6.00 p.m. phone: (403) 627-4972.

SASKATCHEWAN — **Saskatoon**. Excellent dental practice for sale at reasonable price. Owner returning to U.S. and anxious to move. Four operatories, two fully equipped. Trained staff will remain if needed. All instruments, supplies, furnishings, and excellent accounts receivables included. Assume existing obligations, some equity sought. Contact: (306) 374-8737 (office) or 373-6106 (home).

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Fonctions: Le titulaire sera responsable du service dentaire au Centre Hospitalier Restigouche et il sera chargé de dispenser des soins dentaires aux malades hospitalisés.

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Lieu de travail: Centre Hospitalier Restigouche, Campbellton.

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Fredericton, Nouveau-Brunswick
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CHURCHILL HEALTH CENTRE

Position Available

DENTIST

Applications are solicited for a dentist at Churchill for a joint appointment between the Churchill Health Centre and the University of Manitoba Faculty of Dentistry.

The C.H.C. is a community-governed centre newly housed in the Churchill Town Centre which provides public health and social services as well as medical and dental ambulatory and in-patient care to this northern Manitoba community and its outlying area. The University of Manitoba provides community experience at Churchill for undergraduate students in Dentistry and Dental Hygiene.

The selected candidate will provide, on a rotating basis with the Chief of Dentistry, service to the Hamlets in the Keewatin region of the North West Territories.

The Clinic in Churchill is modern, well-equipped, and well staffed with dental auxiliary personnel. It provides dental treatment services, plus clinical and preventive programs in the local school.

The salary range starts at \$38,000.00, which includes remoteness allowance. The benefit package includes substantially subsidized housing, relocation assistance, holiday travel and annual educational leave.

Applications in the form of a letter including a curriculum vitae and the names of at least two references, or enquiries to be directed to:

Dr. Donald B. Proctor
Chairman, Rural and Urban Committee
Faculty of Dentistry
University of Manitoba
780 Bannatyne Avenue
Winnipeg, Manitoba
R3E 0W3

ONTARIO — Exceptional opportunity to purchase a fine preventive family practice well-established with high earnings and excellent personnel. 45 minutes north of Toronto in farming community with drawing area of 10,000. Two modern equipped operatories with third partially set up. Reply to CDA Box Number 1925.

ONTARIO — **London.** For lease: 500 sq. ft. and 850 sq. ft., in modern medical-dental building. Excellent parking, medical laboratory, X-ray laboratory. Phone: (519) 432-8193.

ONTARIO — **Central London.** New modern dental office for sale. Owner merging practice and moving to larger office. 1,000 sq. ft., professionally decorated. Willing to sell as is or move equipment not required by purchaser. Please reply to CDA Box Number 1960.

ONTARIO — **Newmarket.** Two dental suites available in new medical centre. Phone: Jeannie Romain (416) 961-7777. Royal Trust Corporation of Canada Realtor, I.C. & I Division, 21 St. Clair Ave. E., Toronto, Ont. M4T 1M1.

ONTARIO — **Toronto.** Practice for sale or associate required. Fully equipped, downtown, periodontal practice, in medical-dental building. Two operatories (room for third), reception area, waiting room, private office, dark-room, x-ray unit, lab. Or associate to work three days, hours to suit yourself. Reply to CDA Box Number 1961.

ONTARIO — **Toronto area.** Quality, modern family practice for sale. Beautiful community 36 miles from heart of downtown Toronto. Owner returning to graduate school. Please reply to CDA Box Number 1962.

SOUTH WESTERN ONTARIO — **Stratford area.** For sale: New two chair office on ground floor, corner of Main Street & Highway 8. Health reasons, sacrifice immediately. Phone: (519) 527-1530.

QUÉBEC — **Montréal.** Bureau à louer dans une clinique dentaire du Boul. St-Joseph, face au métro. Redécoré, salle de repos, salle de filières et modèles, laboratoire etc. Très avantageux pour tout dentiste car dépenses d'installation sont minimales. Répondez à: Dr. Serge Carle, 415 est Boul. St-Joseph, Montréal, P.Q. H2J 1J6. Telephone: (514) 849-3706.

QUEBEC — **Montreal (West Island).** Established busy dental practice for sale. Self-contained bungalow, office building included. Lots of space; two operatories, private offices, utility rooms. Basement contains lounge and lab. Must be seen. Reply to CDA Box Number 1966.

NOVA SCOTIA — **Halifax.** Large dental practice in central Halifax for sale. The office has two operatories and a Panoramic X-ray unit. The owner is returning to Specialty School. Reply to: Dr. J.P. Laba, 1584 Robie Street, Halifax, N.S. B3H 3E6.



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Applications are invited for the full-time (or part-time) positions of director and assistant director for a teaching evaluation project. The Association of Canadian Faculties of Dentistry is conducting a National Clinical Competency Evaluation Project to evaluate clinical teaching and evaluation in most of the Canadian dental schools. The project will involve collecting and analyzing baseline data, co-ordinating evaluation committees, developing and testing the methodology for evaluating the clinical competency of undergraduate dentistry and dental hygiene students. This five-year project will commence in the fall of 1980, and it will be university based with the location yet to be determined. Preference will be given to applicants with experience in student evaluation and measurement and/or knowledge of clinical dentistry. Salary is commensurate with experience.

Applications, including curriculum vitae and names of references, should be sent to Dean G.W. Thompson, Faculty of Dentistry, Room 3036 Dentistry/Pharmacy Centre, The University of Alberta, Edmonton, Alberta, T6G 2N8, before April 30, 1980. Inquiries can be made by phoning Dr. Thompson at (403) 432-3312.

SASKATCHEWAN — Weyburn. Associateship leading to full partnership in modern, well established dental practice with one other dentist, hygienist, and dental nurse. Eight modern operatories, fully equipped, orthopan, hospital privileges available. Town of 10,000, drawing area 70,000. Excellent hunting, fishing and recreation nearby. Call or write: Dr. Don Dufour, 142 3rd Street N., Weyburn, Sask. S4H 0W2. Phone: (306) 842-2382.

NORTHERN MANITOBA — Associate required: Excellent opportunity for male or female dentist in pleasant family practice. Some travelling required. High remuneration, 50% gross, 50% of lab bills. Good recreation area. For further information contact: Dr. Malcolm Crozier, Box 637, Flin Flon, Man., or phone (204) 687-4214.

ONTARIO — Toronto. Associate required for busy practice. Well equipped and good working environment. Great potential for industrious, patient oriented applicant. Reply to CDA Box Number 1945.

SOUTHWESTERN ONTARIO — Associate required for modern six operator practice with partnership potential; full or part-time. Reply to CDA Box Number 1959.

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BRITISH COLUMBIA — Vancouver. Hygienist wanted for dental office. Excellent working conditions and salary. Starting time flexible. Please reply to CDA Box Number 1965.

ALBERTA — Medicine Hat. Associateship or practice for lease: established eight year old, high quality general practice with emphasis on Crown and Bridge, Perio and Endo. Excellent opportunity to enter a busy practice with no capital expense. Partner returning to graduate school. Apply to: Dr. D. Habijanac, 304, 578 — 3rd Street, S.E., Medicine Hat, Alta. T1A 0H3. Phone: (403) 527-7833 (office) or 526-2730 (home).

MANITOBA — A city serving an area of over 100,000, requires an orthodontist to work independent of, but in conjunction with, a growing group practice. The need exists for a full-time specialist. A variety of interesting options regarding the relationship with the group and/or other practitioners exists. Reply to CDA Box Number 1963.

MANITOBA — Winnipeg. Oral surgeon certified to practise in Manitoba required for a busy practice. Object partnership. Please submit photo to CDA Box Number 1970.

ONTARIO — Gore Bay (Manitoulin Island). Group practice with three dentists and hygienist require a locum for June, July and August, 1980. Position will very possibly lead to an associateship in a busy Ontario practice, situated in a delightful rural area with excellent patient load and remuneration. Phone (705) 282-2223 during day or (705) 282-2086 evenings and weekends.

ONTARIO — Richmond Hill (five miles north of Toronto). Consistently grossing, 22 year established, general dental practice available, June 1980. A-Dec Micro Cart, Dental-Eze computerized chair, custom modular cabinetry, four-handed set up. Competent, dedicated staff. Two amiable cost sharing partners. Reply in confidence: P.O. Box 384, Richmond Hill, Ont.

ONTARIO — Toronto. Paedodontist required for busy Paedodontic practice in north Metropolitan Toronto. Opportunities available for partnership. Position available immediately. Applicant must be certified to practise in Ontario. Reply in strict confidence to CDA Box Number 1912.

QUÉBEC — Montréal. Bureau dentaire à louer (coin Décarie — Côte Vertu) Ville St. Laurent. 2 salles opératoires, réception — salle attente, avec ou sans équipement. Appeler (514) 336-6464.

DENTIST

Saskatchewan Social Services, Valley View Centre, Moose Jaw, requires a Dentist to provide dental services for its 750 mentally retarded residents. Reporting to the Clinical Director of the Institution, the Dentist will be responsible for diagnosis, treatment, and preventive planning.

Applicants should have a dental degree and be licensed to practice in Saskatchewan, supplemented by several years of experience in the practice of dentistry.

SALARY: \$31,212 — \$38,856
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COMPETITION: 613020-9-486

CLOSING: As soon as possible

Forward your application forms and/or resumé to the Saskatchewan Public Service Commission, 1820 Albert Street, Regina, S4P 3V7, quoting position, department and competition number.

QUÉBEC — Montreal. Dentist required for dental clinic located at Ville St. Laurent (Décarie — Côte Vertu). Two operatories, reception and waiting room to be rented with or without equipment. If interested call: (514) 336-6464.

Opportunities Wanted

BRITISH COLUMBIA — Dentist graduated from University of Toronto with two years experience in private practice, seeks associateship and/or purchase of a practice in Vancouver area, but will consider other areas in British Columbia. Reply to CDA Box Number 1968, or call (416) 598-1216.

BRITISH COLUMBIA — Lower Mainland. Mature general dental practitioner with five years experience seeks part-time associateship. Offer does not raise problem of potential conflict of interest. Reply to CDA Box Number 1957.

BRITISH COLUMBIA — Third year bilingual dentistry student is looking for summer work as a dental assistant in a private office, with possibility of association after graduation in May 1981. For further details reply to CDA Box Number 1967.

ONTARIO — Ottawa area. Dentist with five years experience in private practice wishes to purchase practice in Ottawa or surrounding area. Will consider associateship leading to purchase or partnership. All information confidential. Please reply to CDA Box Number 1969.

Miscellaneous

West German Dentist, aged 40, working in Hanover, interested in contacting dentist Montreal planning to attend FDI Congress, Hamburg, September, 1980. Sight seeing, family visits, opportunity to learn more about the German way of life. Write directly to: Dr. Herman Wulfert, Hildesheimer Str. 52, 3014 Laatzen 1, West Germany.

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Full time position, Division Head in the Department of Oral Diagnosis and Oral Surgery, available immediately.

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DENTIST

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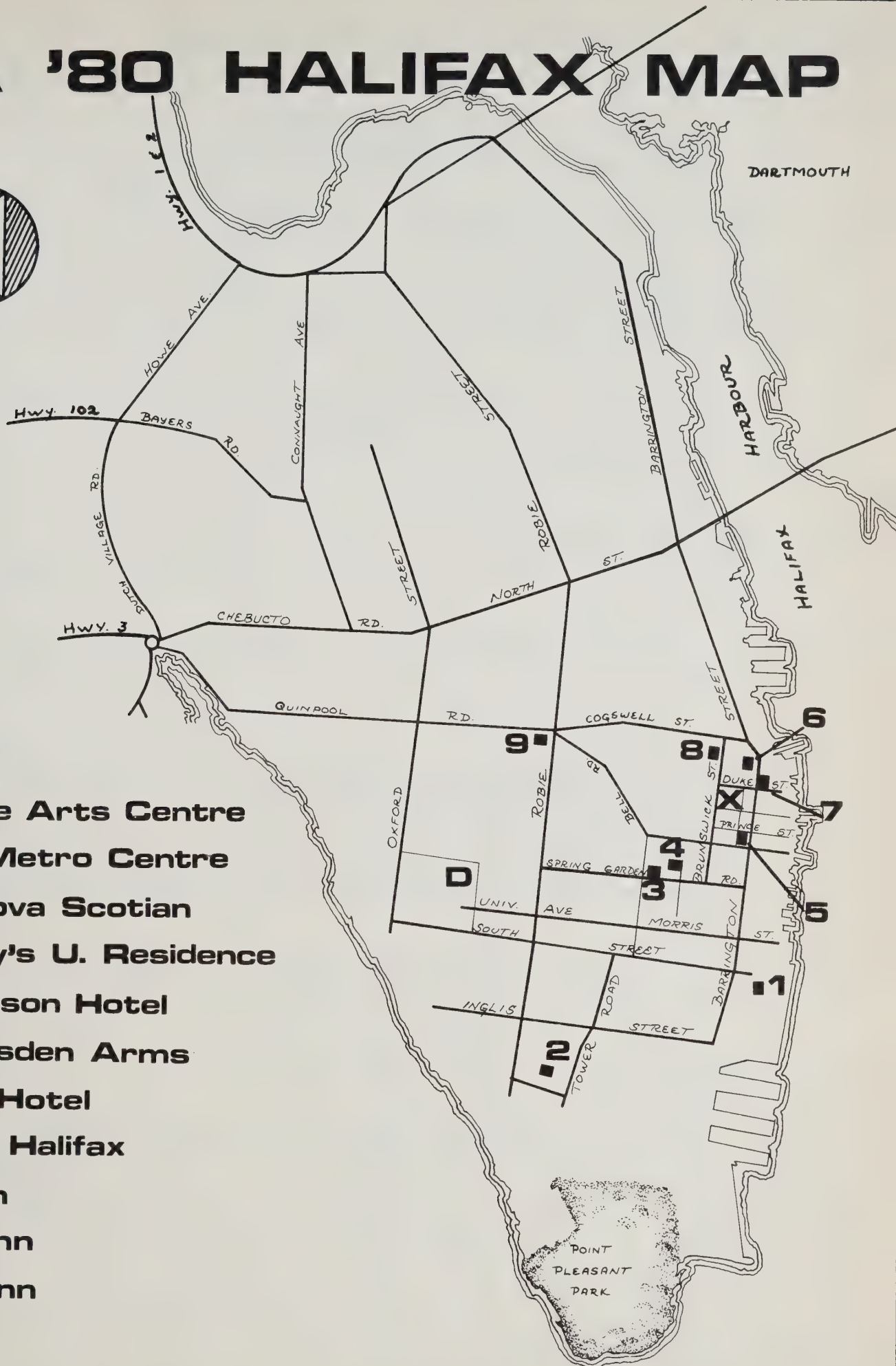
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CDA '80 HALIFAX MAP



- 0 Dalhousie Arts Centre
- X Halifax Metro Centre
- 1 Hotel Nova Scotian
- 2 St. Mary's U. Residence
- 3 Lord Nelson Hotel
- 4 The Dresden Arms
- 5 Carlton Hotel
- 6 Chateau Halifax
- 7 Delta Inn
- 8 Citadel Inn
- 9 Holiday Inn

July 13-16, 1980
Halifax, Nova Scotia

National Convention

Canadian Dental Association

Congrès National

L'Association Dentaire Canadienne

13-16 juillet, 1980
Halifax, Nouvelle-Écosse

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Tel. No. _____

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Hygienist ☐ Hygiéniste ☐
Assistant ☐ Assistant(e) ☐
Technician ☐ Technicien(ne) ☐

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Indiquer 5 Hôtels par ordre de préférence

Single ☐ Twin ☐ Apt. ☐
Simple ☐ Jumeaux ☐ Double ☐ Suite ☐ App. ☐

1. _____
2. _____
3. _____
4. _____
5. _____

Do you wish your reservation guaranteed? Yes _____ No _____ Unless guaranteed, reservation will only be held until 6 pm. Room allocation will be made only to convention registrants. Advance payment will be required upon receipt of confirmation. Do not enclose accommodation payment with this form. Do not include accommodation payment in registration cheque.

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Date arriving — Date d'arrivée _____ AM _____ PM _____ Mode of Travel _____

Date departing — Date de départ _____ AM _____ PM _____ Mode de Transport _____

	Simple Single	Double	Apt. App.	Suite	CODE
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+Chateau Halifax (CP)	40.	48.	—	—	-housekeeping units available
Barrington Inn (Delta)	42.	48.	—	—	chambre avec cuisines disponibles
Lord Nelson	35.	38.	—	—	@reserved for auxiliaries
+Citadel Inn	43.50	46.50	—	—	réservés aux auxiliaires
Carlton Hotel	—	24.-28.	—	50.	+pool-piscine
+St. Mary's University Housing	10.	16.	30.	—	
*+Keddy's Motor Inn	28.	36.-40.	—	—	
@+Holiday Inn-Halifax	40.	46.	—	—	
*Holiday Inn-Darhmouth	31.50	—	—	—	
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*+Sea King Motel	24.	29.	—	—	

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Continuing Education in Dentistry
Dalhousie University
Halifax, N.S. B3H 3J5

July 13-16, 1980
Halifax, Nova Scotia

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Canadian Dental Association

L'Association Dentaire Canadienne

13-16 juillet 1980
Halifax, Nouvelle-Écosse

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PLEASE PRINT OR TYPE

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Address _____

Receipt will be sent to the above. Please use separate forms if individual receipts are required. You may photocopy this form.

ROLE: Please indicate your principal role in CDA, CDHA, CDNAA, e.g., Member, President of Prosthodontic Section, Chairman of Council on Education, etc., after your name.

DENTISTS: Name (For name tag) _____ ROLE _____
CDA Member & Foreign Dentists \$145. before or \$165. after June 1, 1980
Canadian Non-CDA Member \$225. before or \$250. after June 1, 1980 \$ _____

INCLUDES: Scientific Sessions, Exhibits, Sunday opening ceremonies and chowder party, Monday night lobster party, Monday and Tuesday luncheons, Wednesday: Beef-'n-Beer

DENTAL HYGIENISTS: Name (For name tag) _____ ROLE _____
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Non-CDHA Member \$100. before or \$130. after June 1, 1980. \$ _____

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DENTAL TECHNICIANS: Name (For name tag) _____ ROLE _____
\$30.00 \$ _____

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DENTAL NURSES AND ASSISTANTS: Name (For name tag) _____ ROLE _____
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SPOUSES: (Other than dentists and auxiliaries) Name (For name tag) _____
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Annapolis Valley with lunch, sightseeing and shopping _____
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Monday night lobster party, additional admission tickets \$25.00 each \$ _____

Tuesday night President's Dinner and Dance \$40.00 per couple \$ _____

TOTAL \$ _____

MAIL TO: CDA National Convention Phone: (902) 424-2248
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July 13-16, 1980
Halifax, Nova Scotia

National Convention

Canadian Dental Association

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L'Association Dentaire Canadienne

13-16 juillet 1980
Halifax, Nouvelle-Écosse

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FONCTION: À la suite de votre nom, on vous prie d'indiquer votre fonction principale au sein de l'ADC, de l'ACHD ou de l'ACGMAD, e.g.: membre, président de la division de prosthodontie, président du Conseil de l'Éducation, etc.

DENTISTES: Nom (pour l'étiquette d'identité) _____ FONCTION _____
Membres de l'ADC et dentistes étrangers: \$145. avant ou \$165. après le 1er juin 1980
Canadiens non membres: \$225. avant ou \$250. après le 1er juin 1980 \$ _____

PRIVILÈGES: les conférences scientifiques, les salles d'exposition, les cérémonies d'ouverture et la dégustation de soupes aux poissons le dimanche, le dîner de homard le lundi, le déjeuner les lundi et mardi, la fête "Beer'n Beef" le mercredi

HYGIENISTES DENTAIRE: Nom (pour l'étiquette d'identité) _____ FONCTION _____
Membres de l'ACHD: \$75. avant ou \$105. après le 1er juin 1980
Non membres: \$100. avant ou \$130. après le 1er juin 1980 \$ _____

PRIVILÈGES: les conférences scientifiques, les salles d'exposition, les cérémonies d'ouverture et la dégustation de soupes aux poissons, le dîner de homard le lundi, le déjeuner des lundi (déjeuner du président) et mardi, la soirée de la présidente le mardi, la fête "Beer'n Beef" le mercredi

TECHNICIENS DENTAIRE: Nom (pour l'étiquette d'identité) _____ FONCTION _____
\$30.00 \$ _____

PRIVILÈGES: les conférences scientifiques, les salles d'exposition, les cérémonies d'ouverture et la dégustation de soupes aux poissons le dimanche, la fête "Beer'n Beef" le mercredi

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FONCTION _____
Membres de l'ACGMAD: \$75. avant et \$85. après le 1er juin 1980 \$ _____

PRIVILÈGES: les conférences scientifiques, les salles d'exposition, les cérémonies d'ouverture et la dégustation de soupes aux poissons le dimanche, le déjeuner les lundi et mardi, le petit-déjeuner du mercredi, l'assemblée annuelle, la visite du port, la fête 'Boeuf et bière' le mercredi

CONJOINTS: (autres que les dentistes et que les adjoints) Nom (pour l'étiquette d'identité) _____
\$55. avant ou \$60. après le 1er juin 1980 \$ _____

PRIVILÈGES: les conférences scientifiques, les salles d'exposition, les cérémonies d'ouverture et la dégustation de soupes aux poissons le dimanche, le déjeuner et le défilé de mode le lundi, le dîner de homard, une visite guidée le mardi (indiquez votre choix:)
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ou excursion, visite des antiquaires et déjeuner sur la côte Sud de la Nouvelle-Écosse

Billets additionnels pour: le dîner de homard le lundi: \$25.00 chacun \$ _____

la soirée du président (dîner et bal): \$40.00 le couple \$ _____

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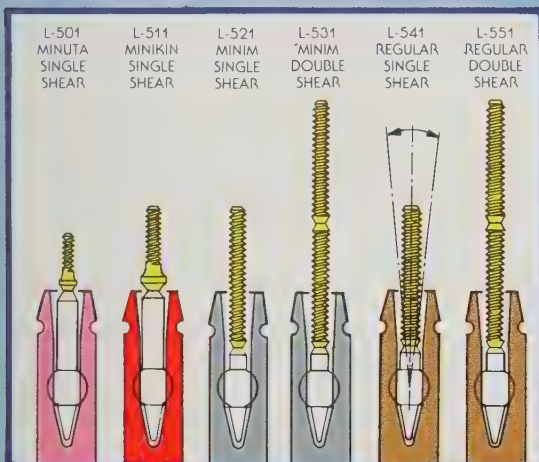
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Vol.46 No.4

Canadian
Dental Association

April
1980

Journal

de l'Association
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Canadienne

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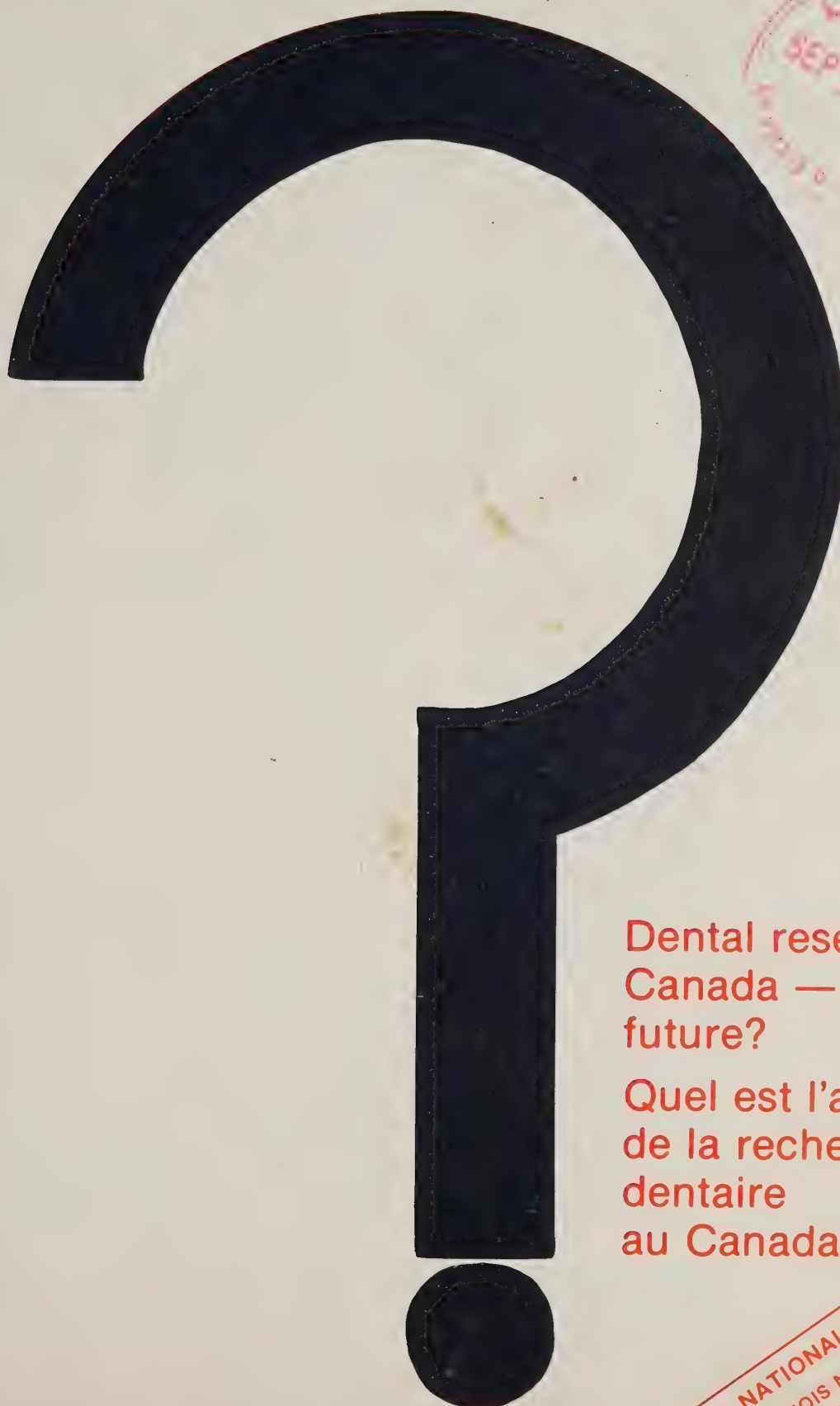
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APRIL IS NATIONAL DENTAL HEALTH MONTH
AVRIL EST LE MOIS NATIONAL DE LA SANTÉ DENTAIRE



THE XYLITOL REPORT NUMBER ONE IN A SERIES.

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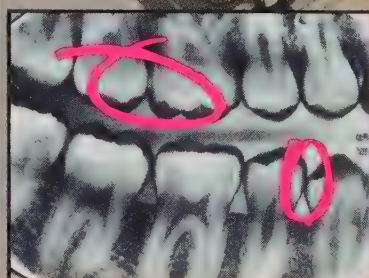
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CONSIDERATION IN
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Déclaration de l'Association Dentaire Canadienne à la Commission d'Enquête sur les Services de Santé

5 mars 1980

Un supplément du Journal de l'Association dentaire canadienne,
avril 1980

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Profitant de l'occasion que lui offre l'institution, par le gouvernement fédéral, de la Commission d'enquête sur les services de santé - 1979, l'Association dentaire canadienne tient à exprimer son point de vue sur l'état actuel des régimes publics d'assurance-maladie du Canada. Le président de la Commission d'enquête se souviendra qu'en mars 1972, l'Association s'était fait un plaisir de présenter un exposé détaillé à la Commission royale sur les services de santé. La principale conséquence de cette Commission a été, au cours de la période allant du 1er juillet 1968 au 1er avril 1971, l'établissement de l'actuel régime d'assurance-maladie canadien. Par rapport à la majorité des pays européens, le Canada a été plutôt lent à implanter un pareil régime, mais il a pu profiter de l'expérience des autres nations en préparant son régime d'assurance-maladie actuel. Malgré cet avantage, les régimes d'assurance-maladie des provinces canadiennes ont fait l'objet de critiques qui ont attiré l'attention des journaux et de la télévision. Aussi en est-il résulté entre les gouvernements fédéral et provinciaux des confrontations qui, en fin de compte, les ont amenés à évaluer les régimes d'assurance-maladie subventionnés.

Deux facteurs ont fait naître l'inquiétude manifestée présentement au sujet des régimes d'assurance-maladie canadiens, à savoir premièrement, les dépenses croissantes qui sont nécessaires pour maintenir ces régimes et, deuxièmement, le mécontentement grandissant qu'éprouvent les professionnels de la santé quant aux mesures des actuels régimes d'assurance-maladie, mécontentement qu'ils manifestent en facturant les patients en sus des prestations prévues, en abandonnant la participation aux régimes ou en émigrant aux Etats-Unis dans une proportion qui est légèrement mais significativement en hausse. Ces deux facteurs, les dépenses élevées en soins de santé et le mécontentement grandissant exprimé par les professionnels de la santé, concernent tous les Canadiens. C'est pourquoi l'Association dentaire canadienne tient à faire part de ses observations à ce sujet.

Les dépenses en soins de santé

A travers le monde, on s'inquiète beaucoup des dépenses croissantes qu'exigent les soins de santé. Aujourd'hui, il n'existe probablement aucun pays développé avec un régime d'assurance-maladie qui ne souffre pas de ce qu'il en coûte. Au Canada, le gouvernement fédéral adoptait, en mars 1977, le

Bill C-37 pour limiter sa part de dépenses en soins de santé. Grâce à cette loi, il limitait également ses subventions à l'aide médicale et il donnait aux provinces plus de liberté pour déterminer, chacune par elle-même, les sommes qu'elles veulent allouer à la santé. C'est pourquoi l'Association dentaire canadienne se demande, premièrement, si le fédéral perçoit correctement le problème des dépenses excessives qu'entraînent les soins de santé et, deuxièmement, si les mesures prescrites subséquemment ont été proprement considérées. L'Association n'a pas l'intention d'analyser en détail le problème des dépenses en soins de santé au Canada. Ce n'est d'ailleurs pas sa responsabilité. De toute façon, des études approfondies ont déjà été faites là-dessus. Néanmoins, l'Association désire faire trois remarques au sujet du budget que le Canada alloue aux soins de santé.

Premièrement, en soulignant de façon constante la somme totale des dépenses en soins dentaires ou en insistant sur le pourcentage global du PNB consacré à la santé, le gouvernement utilise un point de référence qui ne tient pas compte du fait que l'augmentation des dépenses dépend de deux facteurs bien distincts, à savoir les soins hospitaliers d'une part et les soins de santé personnels d'autre part. Il est vrai que le coût des soins hospitaliers 'per capita' s'est très élevé, au Canada comme dans plusieurs pays développés, au cours des deux dernières décennies. Par contre, le coût des soins de santé personnels 'per capita' ne s'est pas élevé rapidement si l'on se réfère à l'indice des prix au consommateur et, de fait, il semble représenter depuis peu une part décroissante du PNB 'per capita'. Il est donc injuste de dénigrer les différents régimes médicaux et dentaires des provinces, puisqu'ils ne sont pas la cause réelle de l'augmentation des dépenses en soins de santé. Pourtant, c'est l'impression que l'on donne aux Canadiens.

Deuxièmement, au lieu d'une augmentation irrésistible des dépenses en soins de santé, le Canada a vu le pourcentage du PNB affecté à la santé se stabiliser depuis l'établissement d'un régime d'assurance-maladie public. Une récente étude sur les dépenses en soins de santé, faite par l'Office Health Economics (le Bureau du Régime économique de la Santé) de Londres, démontre que le pourcentage des dépenses du Canada constitue la moyenne quand on considère les pays avec des revenus bruts comparables. Les dépenses des Etats-Unis, des Pays-Bas et de la France sont plus élevées, celles de l'Australie, de la Norvège et de la Belgique le sont moins. Inutile de dire

que ces données ne constituent pas une preuve à l'effet que les Canadiens consacrent une somme optimale à la santé. Cependant, elles indiquent que, pour le total des sommes affectées à la santé, le Canada semble occuper un rang moyen confortable par rapport à l'ensemble des pays développés qui offrent un niveau de vie semblable.

Troisièmement, l'Association aimerait rappeler aux autorités gouvernementales le simple point suivant: lorsque le régime d'assurance-maladie fut implanté au Canada pour indemniser les citoyens de leurs frais hospitaliers et médicaux, son but était de fournir de l'assurance à ces centaines de milliers de Canadiens pour qui l'acquiescement des services médicaux posait un problème. En essayant de solutionner ce problème, un pays doit s'attendre, logiquement, à faire des débours accrus pour défrayer les soins de santé qui sont offerts à ceux qui, auparavant, ne pouvaient les obtenir. Des études faites en Saskatchewan et au Québec, de même que l'expérience Medicaid aux Etats-Unis, ont démontré que les classes pauvres font davantage appel, et d'une façon très marquée, aux services médicaux lorsqu'ils ont accès à un régime d'assurance-maladie. L'on présume que c'est bien ainsi et qu'il s'ensuit naturellement que, dans l'immédiat au moins, des dépenses accrues sont à prévoir pour les soins médicaux.

Le mécontentement dans les milieux de la santé

Au Canada, le deuxième problème fondamental en matière d'assurance-maladie publique, c'est le fait que les professionnels de la santé sont de plus en plus mécontents des régimes. L'Association dentaire canadienne croit qu'il s'agit là d'un problème sérieux. Déjà, il en est résulté des désagréments sans conséquence pour nombre de citoyens, mais, à la longue, cet état de fait peut nuire à notre société. Récemment, médecins et dentistes donnaient des signes de leur mécontentement en facturant les patients en sus des prestations allouées ou en tendant de plus en plus à soustraire leur pratique aux régimes d'assurance-maladie. Et parmi les jeunes diplômés qui ont reçu leur formation au Canada, on note que certains émigrent aux Etats-Unis. Quelles sont les causes de ce mécontentement?

La raison majeure est peut-être le fait que les régimes d'assurance-maladie publics ont progressivement amené une baisse du niveau de vie parmi les professionnels de la santé. Lorsqu'on a commencé à soulever le problème de l'assurance-maladie chez nous, il n'a jamais été explicitement question que ce moyen servirait à abaisser le niveau de vie des professionnels de la santé. Au Canada, il a toujours semblé que le but de l'assurance-maladie ait été de rendre les soins médicaux accessibles à tous les citoyens. Autrement dit, on voyait là un moyen acceptable de redistribuer les revenus. Au cours des années, alors que baissaient les revenus réels des médecins et de certains dentistes, il est devenu évident qu'étaient fondées les craintes des plus réticents parmi les praticiens indépendants. En tant que membres d'une société qui partage un commun désir de bien-être économique, les professionnels de la santé ne peuvent rester indifférents à ce qui se passe et on ne peut s'attendre à ce qu'ils le demeurent. Plus cette tendance se maintiendra, plus ils seront frustrés et plus leur moral sera affecté.

Le désagrément naît aussi du fait que les gouvernements agissent trop rapidement, souvent à l'encontre des avis exprimés par les professions de la santé qui sont les plus concernées. En médecine dentaire, les faits ne manquent pas qui ont contribué à mécontenter les professionnels. Ainsi, en Saskatchewan, des infirmières dentaires comme on en trouve en Nouvelle-Zélande sont apparues soudainement; au Québec et en Ontario, des programmes d'hygiène dentaire ont été développés hâtivement, seulement pour être arrêtés brusquement quelques années plus tard à cause d'une apparente erreur de conjecture; enfin, on a changé de façon irrationnelle et arbitraire les garanties offertes par les régimes d'assurance dentaire subventionnés. Ces initiatives gouvernementales sont malheureuses et inopportunes. Elles peuvent détruire le climat de confiance et d'entraide qui avait

contribué à donner aux Canadiens des services de santé de haute qualité. Or, ces services de haute qualité, tous les désirent et tous y ont droit.

Outre les répercussions que les régimes d'assurance-maladie ont eu relativement sur le niveau de vie des médecins et outre les interventions hâtives souvent inconsidérées que les gouvernements ont faites auprès des praticiens autonomes, les dentistes regrettent que les gouvernements, en traitant avec l'une ou l'autre des professions médicales, aient créé un climat où règne la contrainte. Les faits parlent par eux-mêmes ici. Premièrement, en voulant imposer leurs vues au sujet de l'aide médicale, deux gouvernements provinciaux, la Saskatchewan et le Québec, ont incité les médecins à faire la grève. Deuxièmement, plusieurs gouvernements provinciaux ont tarifié les services médicaux en décrétant que ces tarifs représentaient 100 pour cent des honoraires permis. Ils enlevaient ainsi aux médecins le droit qu'ils avaient eu auparavant de déterminer les tarifs, compte tenu de la complexité des cas ou du temps passé à traiter les patients. Troisièmement, l'Ontario a donné un autre exemple des pressions que peuvent faire les gouvernements et a commis un acte complètement injustifiable en publiant les noms des médecins qui avaient facturé un régime d'assurance-maladie au-delà d'un montant arbitraire ainsi que les sommes qu'ils avaient reçues. Quatrièmement, une autre façon d'exercer des contraintes qu'on a trop mésestimée, c'est la manière dont plusieurs provinces ont conçu leurs régimes d'assurance-maladie. On pense en particulier aux implications que comportent les diverses mesures permettant aux médecins de choisir de ne pas participer à ces régimes. A première vue, il semble qu'on ait voulu préserver ainsi la liberté de choix et du médecin et du patient. De fait, c'est là un moyen plus subtil et plus puissant de s'imposer aux membres autonomes des professions médicales.

L'Association dentaire canadienne regrette que les médecins soient de plus en plus mécontents des régimes d'assurance-maladie du Canada, et il regrette encore davantage les raisons sous-jacentes qui affectent présentement le moral des corps médicaux. En général, les Canadiens considèrent que l'assurance-maladie est une bonne chose. Cependant, comme l'a fait remarquer M. Taylor, lorsque, "sans donner d'avis ou sans consulter les experts, les gouvernements interviennent pour modifier radicalement les salaires ou bien pour les réduire, le moral baisse dangereusement et, conséquence inévitable et peut-être inconsciente, la qualité des services en souffrent ... Qu'ils soient médecins, dentistes, infirmiers, travailleurs sociaux, professeurs ... les professionnels offrent au public des services dont la qualité se caractérise avant tout par sa fragilité ... Cette qualité dépend non seulement de la compétence des individus, mais aussi, et dans une large mesure, de leur moral, de ce qu'ils pensent du gouvernement, de la confiance que leur carrière respective leur inspire et des conditions qui leur permettent de poursuivre celle-ci." Tel est également le point de vue de l'Association dentaire canadienne.

Pour récapituler ce qui a été dit jusqu'à maintenant, l'Association croit que l'inquiétude qui se manifeste actuellement au Canada à propos de l'assurance-maladie publique, procède de deux causes, à savoir, premièrement, l'idée qu'on se fait des dépenses élevées occasionées par les soins de santé, et, deuxièmement, le mécontentement grandissant des médecins à l'égard des actuelles mesures des régimes d'assurance-maladie publics. L'ADC pense qu'on a accordé trop d'importance à la première cause et qu'on l'a exposée d'une manière trop simpliste. Plus particulièrement, on se réfère au coût des services hospitaliers qui a considérablement augmenté alors que, pour les soins de santé personnels, l'augmentation du coût a commencé à diminuer même par rapport à l'indice des prix au consommateur. Pour ce qui est du moral des professionnels, l'ADC croit qu'il s'agit d'un problème important qui, s'il n'est pas résolu, pourra éventuellement avoir une influence négative sur l'ensemble des services médicaux offerts au Canada.

Par conséquent, l'Association demande instamment aux régimes d'assurance-maladie provinciaux de reconnaître que les dépenses occasionnées par les soins de santé au Canada ne sont pas trop élevées et, en particulier, que les sommes allouées aux soins de santé personnels ne sont pas suffisantes. Puisqu'il semble n'y avoir aucune justification valable du contraire, des mesures immédiates devraient être prises pour augmenter les prestations des soins de santé personnels de manière à s'assurer que des services de qualité soient de nouveau accessibles à tous.

Par ailleurs, l'Association dentaire canadienne croit qu'il est essentiel de raffermir le moral qui tend à s'affaïsser présentement parmi les professionnels de la santé. Sans doute n'existe-t-il aucun moyen simple pour atteindre ce but et faudra-t-il plutôt recourir à un ensemble de mesures positives. Ainsi on devra tout au moins consulter plus souvent et d'une façon plus pertinente les organisations qui représentent les professions médicales, et cela avant que les gouvernements ne prennent des décisions; cesser, en négociant avec les professionnels médicaux, de voir en eux des adversaires et d'essayer de marchander leurs services; et, enfin, obtenir des gouvernements qu'ils s'engagent financièrement pour assurer la présence de médecins qui soient compétents, énergiques et consciencieux.

La santé dentaire des Canadiens

L'Association dentaire canadienne voudrait maintenant se pencher sur les questions qui intéressent plus particulièrement la médecine dentaire et réviser celles qu'elle croit être les plus importantes quant aux fins et objectifs que se propose la Commission d'enquête sur les services de santé. Suivant le conseil du personnel de la Commission, l'Association a accepté de faire une présentation moins étendue que ne l'aurait préféré le corps dentaire. Cela veut dire, notamment, qu'on ne pourra aborder les questions importantes touchant les ressources requises pour former adéquatement des professionnels dentaires dont la carrière s'étendra jusqu'à bien avant dans le XXI^e siècle. De plus, il est pratiquement exclu qu'on puisse examiner sérieusement les programmes nationaux de recherche dentaire qui sont pauvrement subventionnés. Ces questions, qui semblent être en dehors des préoccupations de la Commission, sont d'une extrême importance pour le succès des programmes de santé dentaire canadiens. C'est pourquoi, et dans la mesure où ces données sont disponibles, le reste de cet exposé sera consacré à la santé dentaire et aux services dentaires du Canada. La documentation de cette partie est divisée en onze appendices qui constituent le gros de cet ouvrage.

La santé dentaire des Canadiens est sans aucun doute meilleure aujourd'hui qu'elle ne l'a jamais été dans l'histoire du Canada. Si l'on s'en remet aux renseignements recueillis récemment, il semblerait que l'indidence de la carie dentaire, les taux de gingivites, le pourcentage des adultes édentés, etc., indiquent tous qu'il y a une amélioration considérable par rapport aux niveaux de santé dentaire déterminés de façon subjective au cours des décennies précédentes. Dans plusieurs régions du Canada, les maux de dents sont devenus si rares parmi les enfants qu'on n'en parle plus que comme une chose du passé. Dans une récente enquête dentaire, un seul enfant sur 1,302 souffrait des dents le jour de l'examen. Toujours parmi les enfants et les adolescents, on a constaté que l'hygiène buccale et l'état de santé des gencives étaient aussi bons au Canada que dans la plupart des pays mondiaux.

Relativement à la santé dentaire, les Canadiens doivent être mis au courant de trois problèmes. Premièrement, le Canada se doit encore, à toutes fins pratiques, d'entreprendre sa première enquête nationale sur la santé dentaire qui soit réellement valable. Actuellement, on ne possède pas de données comparables sur la santé dentaire des régions particulières comme le Canada atlantique, le Yukon, les Territoires du Nord-Ouest ou la Saskatchewan; il n'y a aucune évaluation sûre sur la santé dentaire des Inuits et du peuple Dene; il y a peu de données sur la santé dentaire des adultes; on ne sait pratiquement rien sur la santé des populations

particulières, tels les vieillards et les handicapés physiques et mentaux. Deuxièmement, certaines maladies dentaires sont plutôt difficiles à diagnostiquer et on n'a pas pu en recueillir des données précises. Ainsi en est-il, par exemple, des besoins orthodontiques que créent les malocclusions, la croissance et les anomalies buccales. Troisièmement, bien qu'on soit renseigné de façon incomplète à ce sujet, on croit que la santé dentaire des Canadiens varie beaucoup selon les régions. D'après ce que l'on sait, il semblerait que, si l'état de santé dentaire des Ontariens et des Albertains est satisfaisant, cela dépende du nombre de leurs praticiens privés qui est supérieur à la moyenne générale des provinces, ainsi que d'un ensemble de facteurs comme la fluoration de l'eau, l'application de programmes de santé dentaire qui favorisent l'éducation, la prévention dentaire et le renvoi des patients à des spécialistes. Ailleurs, surtout au Québec et aussi, soupçonne-t-on, dans les provinces de l'Atlantique, la santé dentaire est moins bonne.

La responsabilité personnelle en matière de santé dentaire

Tel que l'a démontré une étude préparée par le gouvernement fédéral et intitulée: "Une Nouvelle Optique sur la santé des Canadiens," quelques-uns des principaux problèmes de santé que la société éprouve actuellement, proviennent d'un mode de vie impliquant des choix imprudents comme les excès de table, l'usage de la cigarette, la consommation excessive d'alcool, etc. Les deux principales maladies buccales, la carie dentaire et la périodontite, sont également le résultat d'habitudes personnelles et familiales qui nuisent à une santé buccale idéale. Quand un individu prend des sucreries entre les repas, fait fi des simples mesures d'hygiène buccale, refuse de consommer de l'eau fluorée, rejette les suppléments de fluor (là où c'est nécessaire), ne visite par le dentiste régulièrement, etc., il agit en connaissance de cause et, le plus souvent, il sait très bien que sa santé dentaire en souffrira. Aucun programme de soins dentaires ne peut ni même devrait tolérer que la santé dentaire soit négligée ainsi. Comme le démontrent les exemples de l'Appendice II, un changement d'habitudes dans l'usage de la cigarette et un intérêt pour un régime alimentaire plus sain et pour l'exercice ont eu des effets probants et salutaires sur le taux de mortalité due au cancer des poumons et aux maladies cardio-vasculaires. Des données américaines indiquent que le nombre de gens âgés portant des dentiers a baissé de façon marquée, et c'est là un autre fait qui tend à prouver qu'un changement d'attitude et d'habitudes a des effets qu'on néglige et qui pourraient élever le niveau de santé dentaire au Canada.

La prévention en médecine dentaire

Quand, en mars 1962, celui qui était alors président de l'Association dentaire canadienne a présenté son abrégé de médecine dentaire à la Commission royale sur les services de santé, il a déclaré que "le problème de la santé dentaire ne sera jamais résolu à moins que l'incidence et la prévalence des maladies dentaires ne diminuent." Fait plus important, il a noté dans la marge de son texte que c'était là "la principale déclaration que nous ferons" à la Commission. Il est évident que l'Association dentaire canadienne s'est occupée de prévention dix ans trop tôt. C'est seulement en 1974, lors de la publication d'une "Nouvelle Optique sur la santé dentaire des Canadiens," que les planificateurs du gouvernement fédéral affectés à la santé ont soutenu énergiquement que la prévention n'avait pas été suffisamment appuyée.

La prévention des maladies dentaires est particulièrement importante pour deux raisons. La première, c'est que les principaux problèmes de santé dentaire - la carie dentaire et la périodontite - sont parmi les plus communes de toutes les maladies qui atteignent les Canadiens. Bien que les maladies dentaires ne constituent pas une menace à la vie, leur prévalence élevée entraîne pour le public des dépenses considérables en soins. La deuxième raison, c'est que, contrairement à plusieurs autres maladies, la maladie dentaire n'est généralement pas circonscrite et ses effets sont habituellement irréversibles. Vu ces circonstances, la

prévention de la maladie dentaire se pose comme une question particulièrement pressante. Malheureusement, les faits depuis 1964 semblent indiquer que les ministères de la santé et fédéral et provinciaux ont fait seulement quelques petits pas en avant pour promouvoir la prévention dentaire et que d'autres en ont fait manifestement en arrière.

Bien que la taxinomie de la prévention primaire, secondaire et tertiaire soit répandue dans les milieux professionnels de la santé, d'autres classifications, dans l'optique publique, répondraient mieux à ce que les gens attendent de la santé dentaire et, par conséquent, seraient plus utiles comme systèmes de référence pour évaluer le succès de la prévention. Pour cette raison, il convient de penser aux mesures de prévention dentaire en se référant à trois domaines: le contrôle de l'environnement, les services de santé personnels et le mode de vie des individus ou des familles. Par rapport à la médecine dentaire, on pourrait prendre comme exemples de ces trois domaines la fluoruration de l'eau, l'application topique de fluorure et les soins d'hygiène buccale pratiqués individuellement de façon constante et consciencieuse.

La fluoruration de l'eau s'est répandue considérablement, puisque les communautés distribuent de l'eau fluorée à 37.2 pour cent de la population présentement, comparativement à 7.4 pour cent en 1961. Cependant, même si la fluoruration réduit de 30 pour cent la carie dentaire chez les enfants et d'un pourcentage seulement légèrement plus bas celle des adultes, il est décevant de remarquer que moins de 20 pour cent de la population de Terre-Neuve, de l'Île-du-Prince-Édouard, du Nouveau-Brunswick, du Québec et de la Colombie Britannique profitent de la fluoruration. En outre, il est évident, - et l'on s'en inquiète, - que la fluoruration a cessé de se répandre au cours des dernières années, alors que des grandes villes canadiennes comme Calgary, Montréal, Regina, Vancouver et Victoria n'ont pas encore adopté cette mesure peu coûteuse, la plus efficace qui soit pour améliorer la santé dentaire en général.

L'application topique du fluorure est un exemple d'un service de santé personnel préventif qui est efficace. Grâce aux progrès de la technologie durant la dernière décennie, on a mis au point des fluorures topiques d'application très facile sans rien leur enlever de leur efficacité première.

Les soins d'hygiène personnels sont un exemple des habitudes préventives qui dépendent presque entièrement de la famille ou de l'individu. Il est difficile de déterminer quel est l'effet d'une bonne hygiène buccale pratiquée consciencieusement. Toutefois, plusieurs études ont démontré que l'hygiène buccale est très intimement liée à la santé des tissus parodontaires. Chez les enfants, de bonnes habitudes d'hygiène buccale produisent des gencives saines. Pour les adultes, la périodontite est un problème majeur et il importe grandement qu'ils pratiquent sans cesse une bonne hygiène buccale s'ils veulent maintenir leur santé buccale.

L'éducation du public en matière de santé dentaire

Au Canada, on n'accorde pas assez d'attention à une bonne éducation du public en matière de santé dentaire. Il est malheureux qu'il en soit ainsi, puisque le seul moyen efficace pour tenter de solutionner des problèmes de santé de cette ampleur, c'est d'influencer le comportement des individus par l'éducation. Le Canada n'a fait aucun effort vigoureux pour promouvoir l'éducation dentaire. Voici pourquoi. Premièrement, on a tendance à s'en remettre à ce que font les autres sociétés et les autres organismes, notamment ceux des États-Unis. Au pays, aucun effort significatif, ni au niveau national, ni au niveau provincial, n'a été tenté pour développer des programmes d'éducation dentaire à l'intention du public. Deuxièmement, pratiquement aucune recherche n'est entreprise au Canada pour développer ou évaluer des méthodes d'éducation en santé dentaire. Tout ceci, plus le refus d'agir avant d'être complètement au fait, ainsi que l'indique "une Nouvelle Optique," a eu pour résultat que les tentatives pour promouvoir l'éducation dentaire auprès du public canadien en sont restées au stade expérimental et se sont faites de façon très désordonnée.

Pourtant, du simple point de vue de l'éducation en matière de santé, on peut voir qu'il y a des possibilités énormes. Les campagnes menées pour réduire l'usage de la cigarette et pour encourager l'exercice physique ont commencé à donner des résultats et elles ont eu pour conséquence prévisible une amélioration de la santé générale. Bien que les maladies dentaires ne soient pas fatales comme le sont le cancer des poumons et les maladies cardio-vasculaires, elles affectent presque tout le monde et entraînent des dépenses en soins très élevées. Aussi est-il de prime importance de donner au public une éducation plus solide en santé dentaire.

La main-d'oeuvre dentaire au Canada

Comparativement à la situation décrite dans le rapport de la Commission royale sur les services de santé qui a été présenté en 1964, l'actuelle main-d'oeuvre dentaire du Canada est, avec la possibilité d'être indemnisé de ses frais dentaires par un tiers partie, le changement le plus significatif de tous. C'est pourquoi l'Association dentaire canadienne demande avec instance que la plus grande attention soit donnée à l'Appendice V. Il y est question des dernières tendances au sein de la main-d'oeuvre dentaire. Alors que l'Association dentaire canadienne a bien pris soin d'éviter de faire aucune prédiction à long terme à ce sujet, elle suggère à cette commission d'examiner très soigneusement ce que les tendances actuelles impliquent en autant que l'avenir de l'intérêt public est concerné.

Le premier point à souligner, le plus important aussi, c'est qu'au Canada, la tendance du rapport dentiste: population, qui tendait à s'aggraver depuis longtemps, a été renversée de façon spectaculaire. En faisant une évaluation prudente pour 1981, il est évident, si l'on se réfère à la Table V-1 de l'Appendice V, que, comparativement à 1961, il y a présentement près de 1,000 patients éventuels de moins par dentiste canadien diplômé. (Par rapport à 1962, cette baisse est de 1,026 patients par dentiste.) Entre autres faits particulièrement importants, on remarque que cette amélioration s'est effectuée environ aux trois quarts à partir de 1971. Autrement dit, comparativement à 1971, il y aura l'an prochain 750 patients éventuels de moins par dentiste. Si l'on remonte à 1931, le changement des rapports dentiste: population d'une décennie à l'autre n'a jamais été aussi grand que durant la dernière décennie. On estime que l'amélioration pour cette seule décennie (1971-1981) dépasse, en la multipliant par deux, la somme des changements qui ont eu lieu durant les trois décennies précédentes, ainsi que l'illustre le schéma V-1 de l'Appendice V.

Bien entendu, les rapports dentiste: population ne sont que des données brutes qui renseignent d'une façon plus ou moins juste sur les effectifs dentaires. Ainsi il n'est pas tenu compte, par exemple, du rendement accru des dentistes grâce aux progrès technologiques, du recours plus grand aux auxiliaires, des changements dans la façon d'organiser une pratique, etc. Il n'est pas tenu compte non plus des nombres variables de dentistes qui ont des pratiques à temps complet, de ceux qui ont des pratiques à temps partiel ou de ceux qui travaillent dans des institutions qui ne sont pas liées directement aux services dentaires. De plus, et ceci est important dans le contexte canadien actuel, on oublie que le dentiste moyen du Canada est devenu un jeune dentiste, ce qui s'explique par le fait que l'ensemble des recrues sont des étudiants sortant des écoles dentaires canadiennes en nombre toujours croissant. Par contre, cela implique qu'entre maintenant et la fin des années '90, l'attrition des dentistes au Canada sera d'un pourcentage relativement plus bas qu'auparavant, puisque le nombre des retraités et des décédés diminuera. C'est là un facteur qui contribuera à un accroissement continu et rapide des effectifs dentaires.

Il y a eu d'autres changements dans les effectifs de la profession dentaire qui ont des conséquences heureuses pour le public. Depuis 1962, le nombre des spécialistes s'est beaucoup accru et on a même créé des spécialités nouvelles. En 1977, environ 8.5 pour cent des dentistes canadiens étaient des spécialistes, alors qu'il y en avait seulement 3.8 pour cent 15

années plus tôt. Dans les spécialités les plus importantes comme l'orthodontie et la chirurgie buccale, le nombre accru des spécialistes a permis qu'ils soient mieux répartis géographiquement. Quant à la création, au Canada, de nouvelles spécialités dentaires, elle a étendu la gamme des services dentaires offerts au public.

En même temps que s'accroissaient les effectifs dentaires, s'accroissaient encore davantage les effectifs des hygiénistes dentaires. Au moment où l'on préparait le rapport de la Commission royale, les hygiénistes dentaires étaient en très petit nombre dans les milieux médicaux. Cependant, entre 1961 et 1978, le nombre des hygiénistes diplômés est passé de 74 à 2,954. L'augmentation chez les hygiénistes dentaires était encore plus remarquable: en 1978, on en comptait 2,100, ce qui représente 71 pour cent des hygiénistes diplômés durant les sept dernières années seulement!

Durant les années '70, un des plus grands motifs de frustration pour les hygiénistes dentaires aussi bien que pour les dentistes a été la façon arbitraire et, à l'occasion, désordonnée dont les autorités provinciales, particulièrement en Ontario et au Québec, ont agencé les programmes de formation en hygiène dentaire. Par rapport à tout système de référence, l'expansion des programmes d'hygiène dentaire a été rapide. Entre 1972 et 1977 seulement, le nombre des nouveaux diplômés s'est accru chaque année jusqu'à passer de 139 à 401. Pour produire cette main-d'oeuvre, il a fallu multiplier rapidement les programmes et, comme il fallait le prévoir, des problèmes ont surgi. Premièrement, la planification pour les institutions d'enseignement était pauvre. Aussi les installations de ces programmes étaient-elles souvent inadéquates. Deuxièmement, il semble qu'on ait, pour une raison injustifiable, accordé une importance secondaire à l'entraînement clinique nécessaire pour devenir un bon hygiéniste dentaire. Entre autres, on a pu se plaindre que certaines cliniques étaient logées dans des lieux impropres et que leurs dimensions n'étaient pas adéquates. Troisièmement, dans la hâte de lancer des nouveaux programmes, on a peu prêté attention au fait que le nombre des professeurs expérimentés en hygiène dentaire était très restreint. On a donc dû faire l'impossible pour trouver du personnel et, souvent, force fut de faire appel à des individus qui étaient peu ou pas préparés pour une carrière dans l'enseignement et qui, certes, étaient incapables de répondre de façon satisfaisante aux exigences des programmes et des institutions. Mais pour comble de la déraison et de l'ironie, dans les deux provinces de l'Ontario et du Québec, les gouvernements ont maintenant entrepris de réduire le nombre des hygiénistes dentaires qui sont diplômés chaque année. On ne sait pas bien véritablement pourquoi on a pris cette décision, mais il est certain qu'elle créera un climat d'incertitude et affectera le moral des gens concernés.

Il est très difficile d'obtenir des données sûres quant au nombre des assistants dentaires au Canada. Sans doute les meilleures évaluations proviennent-elles des enquêtes sur les pratiques dentaires qui ont été menées par les associations dentaires provinciales. Des enquêtes effectuées en 1973, 1976 et 1978, soit en Alberta, soit en Colombie Britannique, indiquent que la moyenne approximative des assistants dentaires (ou leurs équivalents) à temps complet par praticien dentaire est de 1.4. On n'a pas tenu compte ici des réceptionnistes, des techniciens dentaires ni des autres employés à temps complet. On remarquera que, par rapport à l'évaluation de MacFarlane en 1962, il y a une augmentation considérable (55.6%). MacFarlane, ayant assumé que 90 pour cent des dentistes diplômés ont des pratiques actives, en déduisait qu'il y avait 0.9 assistant dentaire (ce chiffre comprend les réceptionnistes) par dentiste. Si l'évaluation courante de 1.4 s'applique à l'ensemble du Canada, et si l'on assume que 85 pour cent des dentistes sont des praticiens à temps complet, il faudrait alors estimer qu'il y aurait environ 12,420 assistants dentaires (y compris leurs équivalents) qui se consacrent à leur profession à temps complet. On doit insister pour dire que cette évaluation est douteuse et qu'elle pourrait être modifiée du tout au tout.

Il s'agit ici d'une otique nationale sur la main-d'oeuvre dentaire. L'Association dentaire canadienne reconnaît,

toutefois, que le personnel dentaire n'est pas réparti également dans toutes les régions du Canada. Par conséquent, l'Association désire et, de fait, recommande que le recrutement soit plus intensif et les programmes plus stimulants afin de réduire les inégalités quant à la densité des effectifs dentaires.

Pour conclure cet exposé sur la main-d'oeuvre, l'Association voudrait encore souligner le fait que le taux d'augmentation du personnel dentaire au cours des deux dernières décennies dépasse de beaucoup le taux d'augmentation de la population canadienne. Non seulement le nombre moyen de Canadiens par dentiste a diminué par plus de 1,000 personnes depuis 1962, mais en même temps les dentistes ont accru leur rendement. A cause de ces deux facteurs: l'augmentation des effectifs dentaires et le rendement accru, il est clair que la profession dentaire peut dispenser des services de qualité au public canadien et que cette capacité a beaucoup augmenté.

Le rendement accru dans les pratiques dentaires privées

Comme on vient de le dire, le rendement des praticiens dentaires s'est accru de façon marquée au cours des deux dernières décennies. Les principaux facteurs qui ont contribué à l'amélioration des services dentaires comprennent, entre autres, un recours plus utile au personnel auxiliaire, des progrès technologiques dans les sciences dentaires et une organisation plus intelligente de la pratique dentaire. Selon diverses évaluations canadiennes et américaines, il semble que chaque dentiste puisse maintenant traiter annuellement entre 300 et 560 patients de plus qu'en 1970. L'Association dentaire canadienne a déjà parlé des effets qu'a eus l'augmentation simultanée des effectifs et du rendement des dentistes. Cependant, on notera également que, durant la période de rapide inflation des dépenses encourues par les pratiques dentaires, c'est grâce au rendement accru des dentistes surtout si les frais dentaires ont augmenté conformément à l'index des prix au consommateur du Canada.

Les dépenses pour les services dentaires

Les dépenses dentaires au Canada ont augmenté et, en 1978, atteignaient 918.1 millions de dollars. Cette somme représente 0.4 pour cent du PNB national et tout juste un peu moins de 5.5 pour cent des dépenses totales de santé. Bien qu'on ne dispose pas de chiffres précis pour les dépenses actuelles, il semble que les Canadiens aient des frais dentaires proportionnellement moindres que ceux des nations de plusieurs pays développés, tels les Etats-Unis, l'Allemagne de l'Ouest et la Scandinavie.

Quand on étudie la courbe des dépenses dentaires au Canada (Appendice VII), on devrait garder présent à l'esprit les points suivants: (a.) Contrairement à la situation qui prévaut actuellement pour les services médicaux, la contribution marginale des services dentaires à la santé dentaire est encore appréciable. (b.) Les frais dans les pratiques dentaires privées incluent une partie élevée et toujours grandissante des coûts qui sont imputables à une technologie, à une main-d'oeuvre et à des fournitures qui sont toutes onéreuses. Plusieurs des dépenses comparables que les médecins encourrent, sont de plus en plus reportées au compte des hôpitaux publiquement subventionnés ou aux laboratoires de services. C'est là une forme de subvention dont les dentistes ne peuvent pas bénéficier. (c.) La demande pour les services dentaires s'est accrue. c'est pourquoi l'une des principales causes qui ont déterminé l'augmentation des dépenses dentaires n'est pas la hausse des frais, mais bien plutôt le fait que plus de gens reçoivent des soins dentaires. Comparativement à la quantité des services donnés dans le passé, il faut voir là une saine tendance.

L'Association dentaire canadienne s'inquiète de ce que les facteurs sous-jacents qui sont liés à l'augmentation des dépenses dentaires soient mal compris. Notamment, on croit trop peu aux sévères augmentations qu'entraîne une organisation qui dispense des services dentaires de grande qualité, comme le montre la Table VII-2 de l'Appendice VII.

L'indemnisation des frais dentaires au Canada

Avec l'augmentation des effectifs dentaires et du rendement des dentistes, le fait le plus important qui soit advenu pour la médecine dentaire comme pour le public a été la montée remarquable des moyens que les Canadiens ont de faire régler leurs frais dentaires par une tierce partie. Les chiffres indiquent qu'au cours des huit années allant de 1970 à 1978 seulement, le nombre des Canadiens qui jouissent d'une garantie d'indemnisation dentaire est passé de 373,635 à 6,678,519, soit une augmentation de 1,787 pour cent. Depuis 1978, les frais dentaires d'environ 28.4 pour cent des Canadiens sont indemnisés par une tierce partie. Cette tendance reflète les désirs du public qui, lors d'un sondage national récent auprès de 2,000 adultes, a indiqué que 9 personnes sur 10 veulent des régimes d'indemnisation dentaires. Et pas moins de 65 pour cent des gens interrogés ont proposé que ces régimes soient financés au moyen de prélèvements combinés auprès des employeurs et des employés.

En 1978, environ 4.8 millions de Canadiens, soit 73 pour cent des gens jouissant d'une garantie d'indemnisation, participaient à des régimes de l'entreprise privée agissant comme tierce partie. Il ne fait pas l'ombre d'un doute que l'assurance dentaire privée continue de se répandre rapidement. Une enquête menée en 1979 auprès de 410 grandes compagnies canadiennes a indiqué qu'il y en avait 50 pour cent d'impliquées dans des régimes dentaires, comparativement à 22 pour cent trois ans passés. Les assurances dentaires collectives constituent un avantage pour l'employé (et ses personnes à charge) et elles se répandent très rapidement à travers le Canada.

Six provinces offrent des régimes d'assurance dentaire subventionnés publiquement, protégeant 1,820,223 personnes ou 7.7 pour cent de la population canadienne (évaluation de 1978). C'est là un effort plutôt modeste et il se distingue par le fait que 73 pour cent des gens protégés par les régimes publics habitent une seule province, en l'occurrence le Québec. Un caractère particulier de ces régimes publics, c'est que leur portée est restrictive non seulement quant aux avantages qu'ils offrent, mais aussi quant aux groupes d'âges qu'ils protègent. Cinq des six régimes actuels sont destinés exclusivement aux enfants, tandis que le sixième ne s'applique qu'aux personnes âgées de plus de 65 ans et à leurs personnes à charge.

L'Association dentaire canadienne reconnaît que, de la façon dont ils sont conçus présentement, les régimes d'indemnisation dentaires présentent deux sortes de problèmes. Premièrement, même si ces régimes se multiplient, il reste que des groupes importants de la population ne peuvent pas y participer. Parmi ces groupes, il y a les populations indigènes, les travailleurs autonomes, les employés des petites entreprises, les chômeurs, les vieillards ainsi que les handicapés physiques et mentaux. En général, il est grandement souhaitable que ces groupes puissent être admissibles aux mêmes avantages dentaires que les autres membres de la société. Deuxièmement, à quelques exceptions près, les dentistes canadiens ont découvert que les régimes dentaires subventionnés publiquement refusent simplement de reconnaître les normes de traitement admises professionnellement et les échelles de frais. Ceci met les dentistes canadiens dans une situation peu enviable, puisque la collaboration avec le gouvernement pose comme condition préalable que soient adoptés les règlements gouvernementaux pour mener une affaire. L'histoire canadienne démontre que ceci implique qu'on doive a priori accepter les lois de

l'adversaire. Il s'ensuit inévitablement et de plus en plus des séances de négociations, une confrontation, de l'acrimonie et un arrêt des services. La profession dentaire dans son ensemble a remarqué qu'une telle approche nuit à l'administration continue des services dentaires de haute qualité auxquels les Canadiens sont habitués.

Il est clair que les Canadiens veulent profiter d'une garantie dentaire offerte par une tierce partie. Ils savent que cette garantie leur permettra d'être traités par le dentiste de leur choix, d'obtenir les soins dentaires de qualité dont ils ont besoin et d'être protégés contre des soucis financiers indus. En outre, les Canadiens ont indiqué qu'ils acceptaient les régimes dentaires souples à l'intention des familles, c'est-à-dire ceux qui ne limitent pas les avantages et n'excluent pas certaines gens de façon arbitraire. Finalement, les tendances des dix dernières années ont démontré que les régimes d'indemnisation dentaires qui sont offerts par une tierce partie et subventionnés par l'entreprise privée, sont pratiques et d'un prix abordable pour des millions de Canadiens. Par conséquent, l'Association dentaire canadienne exhorte les gouvernements provinciaux à appuyer ce genre de régime dentaire à l'intention des familles, afin que tous les groupes possibles de Canadiens aient un meilleur accès aux soins dentaires. Pour ce faire, il faut reconnaître les besoins des groupes spéciaux mentionnés plus tôt.

Les programmes dentaires dans les écoles

Il y a plusieurs programmes dentaires établis dans des écoles au Canada. La plupart sont subventionnés par des taxes municipales et provinciales, et leurs personnels comprennent des dentistes, des assistants et des hygiénistes dentaires. L'étendue des services offerts par les programmes dentaires dans les écoles varie, mais habituellement ils encouragent l'éducation dentaire, les soins préventifs, le renvoi des cas spéciaux à des spécialistes et, dans une plus petite mesure, les traitements. De tels programmes ont contribué d'une façon inestimable à la santé dentaire des enfants canadiens. Il devient apparent que, dans des provinces comme l'Ontario et l'Alberta, un ensemble de facteurs comprenant la fluoruration de l'eau, les programmes dentaires dans les écoles et un nombre de dentistes relativement suffisant, ont eu pour résultat une bonne santé dentaire parmi les écoliers. Hunt et ses collaborateurs ont observé qu'avec la façon dont l'Ontario dispense des soins dentaires, le taux de caries chez les enfants est bas, le taux des traitements est élevé (87 pour cent), le recours aux services est bon (71 pour cent) et le nombre de dents affectées par la gingivite est bas. De plus, ils laissent entendre que la santé dentaire des enfants ontariens est telle que les futurs adultes "auront une santé dentaire très améliorée à cause des soins dentaires qui sont plus disponibles et de la fluoruration de l'eau qui est plus répandue... On pourrait déduire des données en santé buccale que les dentistes de l'Ontario dispensent des soins de qualité supérieure à leurs clients."¹²

Trois provinces ont essayé d'établir des programmes de traitements dans les écoles. Ces programmes sont préparés et administrés par un organisme central et ils font appel à un personnel salarié. Depuis 1978, 118,524 personnes s'y sont inscrites, soit 0.5 pour cent de la population canadienne. Bien que certains aient accordé un appui enthousiaste à ces programmes, on n'a pas bien reconnu quelles seraient leur utilité et, à long terme, leur efficacité dans le contexte nord-américain. C'est pourquoi, bien que la qualité des restaurations effectuées soit acceptable et que les taux de recours aux services soient élevés, la division du système de

santé dentaire en services distincts pour les différents groupes d'âges, entraîne, chez les sujets qui ne sont plus admissibles à ces programmes, des habitudes plutôt mauvaises, en ce sens qu'ils n'apprennent pas à chercher par eux-mêmes des soins dentaires. De plus, vu la baisse actuelle du taux des caries, il a été démontré ailleurs que les programmes de traitements dans les écoles sont d'une efficacité douteuse, compte tenu de leur coût. Enfin, il a été prouvé à maintes reprises que ces programmes ont eu des résultats négatifs, les rapports O/CAO(D) étant élevés. Et fait plus significatif encore, ils n'ont pas réduit l'importance des maladies dentaires ni procuré une meilleure santé dentaire à la communauté en général.

Pour ces raisons, l'Association dentaire canadienne pense que les programmes dentaires dans les écoles devraient être établis de manière à offrir des services préventifs et éducatifs en général, plus, là où c'est possible, des services pour le classement des cas et pour le renvoi des cas spéciaux aux spécialistes. De tels programmes font intégralement partie du système de santé dentaire à l'intention des familles. Selon la profession dentaire, là se trouve la solution aux problèmes de la santé buccale d'une nation.

La disponibilité des soins dentaires

Sans doute aucun sujet de la médecine dentaire n'agite-t-il plus les esprits que la question de la disponibilité des soins. Cela est aussi compréhensible que malheureux, car cette question s'enveloppe dans l'ambiguïté et la rhétorique. C'est seulement à de rares occasions qu'elle s'éclaire, grâce à une présentation logique et analytique. L'Appendice X est une tentative pour jeter un peu de lumière sur le débat.

Comme l'impliquent les précédents commentaires sur la main-d'oeuvre et le rendement dentaires aussi bien que sur l'indemnisation des frais par une tierce partie, il y a eu au Canada une importante amélioration dans la disponibilité des soins dentaires. Contrairement aux conditions qui prévalaient quand MacFarlane a fait son enquête pour la Commission royale sur les services de santé, on ne peut plus parler d'insuffisances techniques totales au sein des effectifs dentaires. Il se dégage de cette situation un dynamisme comme on a pu le constater en voyant les rapports dentiste: population s'améliorer, le nombre des auxiliaires augmenter, les taux de naissances et d'immigration diminuer, les taux de caries baisser, le rendement des dentistes s'accroître et une main-d'oeuvre plus jeune se constituer. Ce dynamisme ne permet pas qu'on analyse les questions de disponibilité d'une façon simpliste et statique. Du point de vue national, la pénurie de dentistes est une notion qu'il convient de réexaminer en entier.

La façon dont les services dentaires sont organisés impose peu de restrictions à leur disponibilité. Contrairement à la médecine, l'art dentaire n'est pas institutionnalisé dans de grands hôpitaux qui, de plus en plus, doivent prodiguer des soins à de longues files de patients externes. L'art dentaire n'est pas non plus encombré de spécialistes, puisque 90 pour cent des dentistes sont des praticiens généraux. Les dentistes sont, en quelque sorte, des pourvoyeurs de premiers soins en abrégé.

Au sujet de la disponibilité sur le plan géographique, il arrive souvent, mais pas toujours, que la santé dentaire des gens de la campagne est moins bonne que celle des citadins. Toutefois, comme l'Appendice X tente de le démontrer, les analystes se demandent de plus en plus si ces différences dans les niveaux de santé dentaire ne sont pas imputables au fait que les soins sont moins disponibles à la campagne, ou si d'autres caractéristiques associées au mode de vie rural ne pourraient pas les expliquer. Ainsi, lorsque le revenu, l'éducation, la

fluoruration de l'eau et d'autres facteurs sont pris en considération, le fait d'habiter la campagne explique peu les différences dans la santé dentaire. On peut voir à la Table X-3 qu'une analyse régressive des taux de traitements de caries dentaires (O/CAO(D)), faite à partir d'un groupement de dentistes, n'a eu aucune valeur explicative valable. A l'exception des régions vraiment isolées dépourvues pratiquement de toutes commodités, il est évident que, là où les modes de transport terrestres sont adéquats, les Canadiens habitant la campagne ont pris l'habitude de se déplacer pour des raisons commerciales et, semble-t-il, ces déplacements incluent les visites au dentiste pour obtenir des soins. Par ailleurs, vu que la main-d'oeuvre dentaire augmente rapidement, un plus grand nombre de dentistes s'établissent dans les communautés rurales.

Les considérations économiques aussi influent sur la disponibilité des soins dentaires et constituent un problème particulièrement complexe. Les querelles qui naissent au sujet de la disponibilité des soins en rapport avec leurs coûts, sont centrées sur les diverses façons dont on définit les objectifs du public en matière de soins médicaux. Ainsi on s'est demandé si le système de santé devait chercher l'équité en matière de disponibilité des soins dentaires, ou bien s'il devait dispenser ses services à tous également. Il est clair maintenant que l'égalité des services n'est pas essentielle, puisque les besoins dentaires varient selon les différents groupes sociaux. L'égalité devrait-elle être alors le principal objectif en matière de santé dentaire? Pour la plupart des observateurs avertis, il semble évident que chercher l'égalité, que ce soit en santé dentaire, en santé générale, en éducation, etc., est un fardeau que l'intérêt public ne peut supporter, ne serait-ce qu'à cause des restrictions qu'imposent des ressources limitées. Par conséquent, l'Association dentaire canadienne croit que les considérations d'équité devraient comprendre la répartition égale parmi les Canadiens des ressources disponibles en soins dentaires. Cela implique dès l'abord qu'on veuille répartir le coût des soins. Et comme l'Association l'a suggéré précédemment, il y a de bonnes raisons pour confier à l'entreprise privée, en autant que faire se peut, le soin de cette répartition.

Sommaire et conclusions

En résumant très brièvement son exposé, l'Association dentaire canadienne insiste pour rappeler que, lorsqu'on distingue parmi les dépenses des soins médicaux les services de santé personnels et les soins hospitaliers, il devient évident que les services dentaires et médicaux exigent relativement peu des ressources canadiennes. Les dépenses pour les services de santé personnels, loin d'être trop élevées, peuvent être trop insuffisantes, ce qui crée des tensions aussi inutiles qu'indésirables dans les milieux médicaux. Le symptôme le plus apparent de ces tensions, c'est le fait que le moral des professions médicales décline. Cette situation nuit au bien-être des Canadiens et devrait être corrigée.

Dans le monde dentaire en particulier, on note que les familles canadiennes jouissent, maintenant plus que jamais, d'une meilleure santé dentaire. Cette amélioration est due en partie aux mesures suivantes: la fluoruration de l'eau est plus répandue dans les communautés, la dentisterie préventive est plus efficace et les gens accordent une attention plus grande à la santé buccale. Cependant, il reste que ces trois mesures ne sont pas appliquées de façon optimale. Un autre facteur important qui a contribué à améliorer la santé dentaire, c'est la spectaculaire augmentation des régimes d'indemnisation par une tierce partie, laquelle, en retour, a eu d'importantes et

d'heureuses conséquences quant à la demande des soins dentaires. Enfin, la profession dentaire peut offrir des services dentaires de haute qualité au public canadien et cette capacité s'est remarquablement accrue depuis la Commission royale sur les services de santé, en 1964, et plus particulièrement au cours des dix dernières années. Cette tendance, favorisée en partie par l'application des programmes pour la construction d'écoles dentaires recommandée par la Commission royale même, semble devoir se maintenir. Tous ces faits mis ensemble, s'ils ne sont pas compromis par des politiques adverses, sont dans l'esprit de la charte de santé pour les Canadiens (Health Charter for Canadians) et laissent présager une bonne santé dentaire pour les futurs Canadiens.

RECOMMANDATIONS

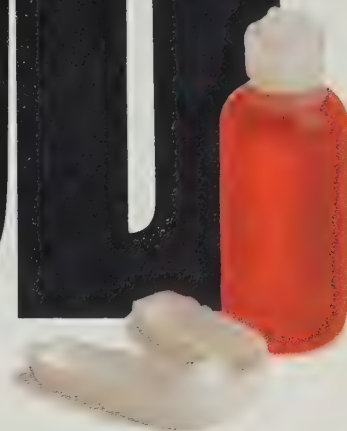
La principale préoccupation de l'Association dentaire canadienne est la santé dentaire du public canadien. Gardant cet objectif présent à l'esprit, l'Association demande instamment que soient adoptées les recommandations suivantes: (1.) On devrait améliorer la qualité de l'information sur les dépenses en soins de santé que l'on transmet au public en général, afin de donner aux Canadiens une idée plus exacte des parts relatives que chacune des principales parties constituantes prélèvent sur la somme totale des dépenses en soins médicaux; (2.) Afin de raffermir le moral défaillant des professions médicales et de leur redonner le sens de la collaboration tel que le définit la charte de santé pour les Canadiens (Health Charter for Canadians), on devrait prendre immédiatement des mesures pour augmenter les allocations relatives destinées aux services de santé personnels; (3.) Afin que se continuent les améliorations actuelles dont profitent les Canadiens en matière de santé dentaire, l'intérêt public demande qu'on favorise les conditions qui ont amené cette tendance, - nommément un système de santé dentaire à l'intention des familles comprenant la fluoruration de l'eau, des programmes de santé publique préventifs et la disponibilité de dentistes capables de fournir des services dentaires de haute qualité; (4.) Pour des fins de planification et d'évaluation future, le gouvernement fédéral devrait accorder beaucoup plus de considération à la recherche dentaire subventionnée, puis qu'elle constitue une source continue de données de valeur sûre au sujet de la santé dentaire des Canadiens de tout âge dans toutes les régions du pays; (5.) On doit faire des pressions auprès des gouvernements provinciaux pour implanter l'usage de la fluoruration dans les communautés, - une mesure préventive contre la carie dentaire qui est sûre, éprouvée et singulièrement efficace. On devrait désigner les provinces dont moins de 20 pour cent de la population est protégée par la fluoruration et leur accorder une attention spéciale; (6.) En accord avec le principe d'une entière collaboration énoncé par la charte de santé pour les Canadiens (Health Charter for Canadians), on doit s'efforcer davantage de mieux éduquer le public et d'enseigner aux Canadiens qu'on peut prévenir la plupart des maladies dentaires et que celles-ci sont associées aux habitudes manifestement mauvaises qu'ont prises certaines gens. Pour être efficace, un tel programme devrait être lié à un système qui stimule les gens et les encourage à se montrer personnellement plus responsables de leur santé dentaire; (7.) On doit fournir aux facultés dentaires canadiennes des ressources supplémentaires considérables non seulement pour qu'elles développent des programmes de recherche sur les problèmes dentaires des groupes spéciaux parmi la population, mais aussi pour qu'elle préparent les diplômés à embrasser des carrières nouvelles en

vue d'aider ces gens. Par groupes spéciaux, l'Association dentaire canadienne veut désigner les Inuits et les Indiens, les nombreuses personnes âgées et les handicapés physiques et mentaux; (8.) Si l'on se rapporte aux multiples sources de renseignements, il serait urgent d'entreprendre une importante étude pour examiner et évaluer l'actuelle surabondance de politiques non coordonnées touchant la main-d'oeuvre dentaire au Canada; (9.) Pour rendre les services dentaires encore plus disponibles, les provinces devraient développer des politiques pour encourager la diffusion rapide, par l'entreprise privée, des régimes d'indemnisation par une tierce partie à l'intention des familles. On doit veiller, cependant, à ce qu'aucun groupe social n'ait pas droit de participer à ces régimes en raison de la façon dont ils sont conçus ou établis; (10.) Afin de promouvoir un système de soins mieux intégré et plus approprié aux familles, les programmes dentaires dans les écoles devraient recevoir un appui maximal afin de fournir des services préventifs et éducatifs et, partout où c'est possible, des services pour le classement des cas et pour le renvoi des cas spéciaux à des spécialistes; (11.) Toutes les provinces et tous les territoires du Canada devraient intensifier leurs efforts pour recruter des dentistes dans les régions qui sont mal servies. A cet égard, on devrait accorder une attention particulière aux programmes qui encouragent les nouveaux diplômés à s'établir dans les petites communautés rurales. Ces programmes se sont révélés très efficaces.

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[†]Beiswanger, B.B., et al.: J. Dent. Child. 45:137, 1978



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de l'Association
Dentaire
Canadienneavril
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The Question —
what's the future of
dental research
in Canada?



Published monthly by the Canadian Dental Association at 1815 Alta Vista Drive, Ottawa, Ont. K1G3Y6. Copyright 1979 by the Canadian Dental Association. Authorized as third class mail, Post Office Department, and for payment of postage in cash.

Notice of change of address should be received before the 10th of the month, to become effective the following month.

Subscriptions: North American subscribers — \$28 (Canadian funds) per year; all other countries \$30 (Canadian funds). No discount for booksellers or agencies.

Subscriptions are payable to January 1. New subscribers should not remit until billed.

U.S. representatives: Medical Media Wm. McCausland, Ed. Goedeke, Box 101, NJ 08071. Phone: 609-589-5454.

All statements of opinion and supposed fact are published on the authority of the author who submits them and do not necessarily express the views of the Canadian Dental Association, unless such statements or opinions have been adopted by the Association.

ISSN 0709-8936

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Vol. 46 No. 4

Canadian
Dental Association

April
1980

Journal

de l'Association
Dentaire
Canadienne

avril
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Le représentant aux É.U.: Medical Media, Wm. McCausland, Ed. Goedeke, Box 101, Pitman, NJ 08071. Téléphone: 609-589-5454.

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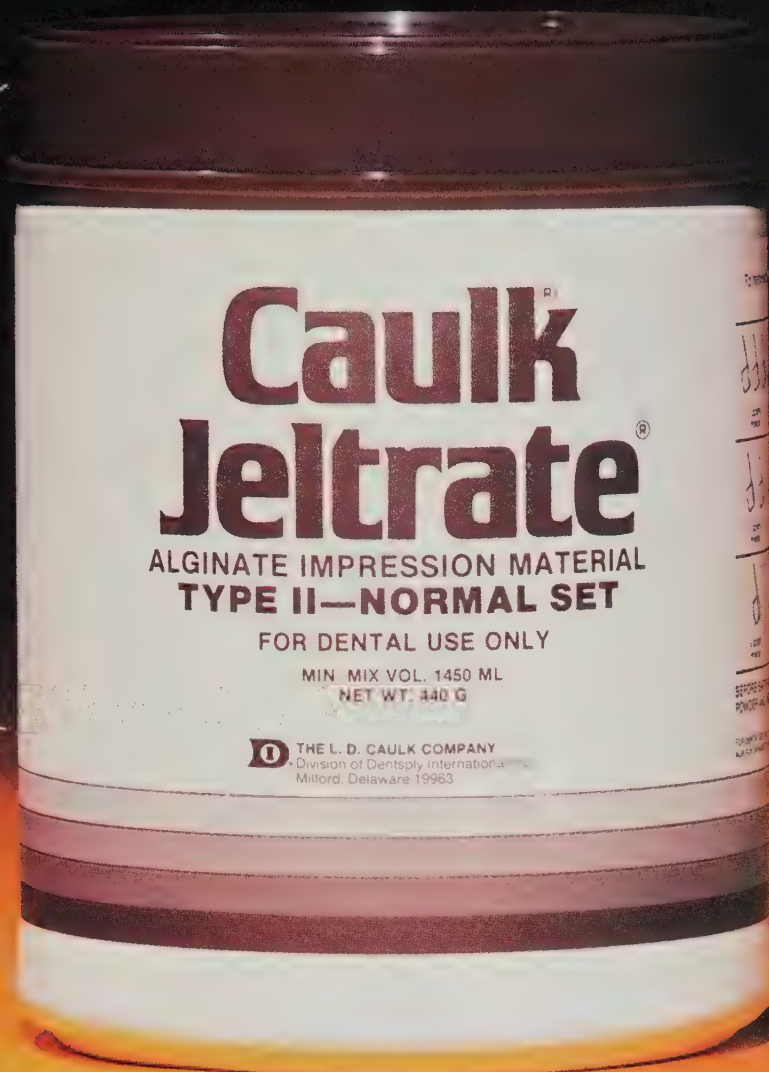
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If you were practising dentistry 100 years ago, you probably had another trade as well—anything from blacksmith to travelling salesman. Because you couldn't make a living just as a dentist.

But dentistry was changing; and if you were serious about your work you were beginning to recognize the merits of preventive dentistry...which meant teaching the public that dentistry was more than "pulling the tooth that hurts". It was about this time that the Colgate company introduced Colgate toothpaste.

As people learned that keeping teeth healthy required day-to-day care, they learned to care for them with Colgate.



By the turn of the century most dentists were no longer common tradesmen, but educated professionals; and the Canadian Dental Association was founded so they could share their skill, their knowledge and their concern for the integrity of the profession. Although more and more toothpastes were now being introduced, Colgate's reputation as an effective dentifrice was already well-established. More and more dentists were recommending Colgate to their patients.



As the century progressed, many biological and technical advances were made in the field of dentistry, one of the most significant of which was the increasing use of fluoride to reduce the incidence of cavities. The first fluorides to be used by dentists were simple in composition: sodium fluoride and stannous fluoride. But the Colgate company was developing its own improved fluoride, MFP (sodium monofluorophosphate). Research showed that this fluoride reacts with the tooth enamel to form fluorapatite*, which makes the tooth more resistant to decay. Tests also showed that staining of teeth, which can be a problem with stannous fluoride, isn't a problem with MFP. Reformulated Colgate with MFP was so effective that it was one of the first toothpastes to receive official recognition from the Canadian Dental Association†. And Colgate** with MFP is still one of the most effective toothpastes in the fight against cavities today.



*Ericsson, Y., The mechanism of the monofluorophosphate action on hydroxyapatite and dental enamel, Acta Odont. Scand., 21, 341-358 (1963).

† Colgate Toothpaste contains sodium monofluorophosphate, which is, in our opinion, an effective decay preventive agent, and is of significant value when used in a conscientiously applied program of oral hygiene and regular professional care.

Canadian Dental Association.

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DENTAL RESEARCH IS THERE A FUTURE?

During the past decade concern for the status of dental research in Canada has been expressed through a number of briefs and papers. The theme for many of these presentations has been that a greater commitment to dental research in terms of both time and money is urgently needed.

As the principal source for dental research funding, the Medical Research Council (MRC) has, from time to time, been subject to severe criticism directed, for the most part, towards Council policies. It is generally held that there is too little support for too few projects.

A close examination of Council policies and actions belies this contention. For example, at the University of Alberta alone, during the last ten years, 80 per cent of faculty members who have submitted applications to the MRC for grant support have been funded at least once. However, a significant proportion of those originally funded have not continued to apply for grants. This, I believe, is because when initially appointed, young faculty members have sufficient time to initiate and follow through on a research program. Within a very short time, however, the pressures of teaching and administrative duties mean less and less time is available for research. All too soon there is not sufficient time to carry on any sort of meaningful research program. And while this is a problem for the non-clinical faculty members, it is far more severe in the case of clinicians.

If research is to be conducted in Canadian Dental Faculties, the problem of time must be seriously considered within the schools and remedial action taken. It is essential that every effort be made to spare young

faculty members, particularly the clinically qualified, from excessive teaching and administrative obligations. Sufficient time must be made available to initiate, and then continue, viable research programs.

Another important development to consider is for a lowering of barriers to collaboration between the clinical and non-clinical researchers within Faculties. It is past time that a mutual respect be developed so that collaborative research projects can be undertaken as a matter of course.

It is only in this way that meaningful, clinically relevant, scientifically sound, research programs will be developed.

Are we equal to the challenge?

Dr. David Carmichael, President,
Canadian Association for
Dental Research, and Chairman,
Research Committee,
Faculty of Dentistry,
University of Alberta.

This Editorial was adapted from Dr. Carmichael's "Viewpoint" published in the Winter, 1979 issue of the Newsletter of the Association of Canadian Faculties of Dentistry.

LA RECHERCHE DENTAIRE: QU'EN SERA-T-IL À L'AVENIR?

Dans des rapports et des mémoires présentés au cours de la dernière décennie, on s'est interrogé sur la recherche dentaire au Canada. Le plus souvent, on a conclu que la recherche dentaire nécessitait plus de temps et d'argent, et que c'était là un besoin pressant.

En tant que principale source subventionnelle de la recherche dentaire, le Conseil de la Recherche médicale (CRM) a, de temps à autre, été l'objet de critiques sévères dont la plupart visaient les politiques du Conseil. En général, on maintient qu'il donne trop peu son appui à trop peu de projets.

Un examen attentif des politiques et des réalisations du Conseil nie cette allégation. Par exemple, à l'Université de l'Alberta seulement, 80 pour cent des membres de la faculté qui, ces dix dernières années, ont fait des demandes au CRM, ont obtenu des subventions au moins une fois. Cependant, un nombre important de ces personnes subventionnées n'a pas formulé d'autres demandes. Cela est dû, je crois, au fait que les jeunes membres de la faculté, lorsqu'on leur octroie une première fois des subventions, ont assez de temps pour mener leurs recherches à terme. Rapidement, toutefois, le chercheur dispose de moins en moins de temps à cause de son enseignement et de ses tâches administratives. Très bientôt, il ne peut plus entreprendre de recherches significatives d'aucune sorte. C'est là un problème pour les membres non cliniques de la faculté, c'en est un beaucoup plus grave pour les cliniciens.

Si les Facultés dentaires canadiennes doivent poursuivre des recherches, il faut sérieusement tenir compte du problème que pose le temps et voir à le solutionner. Aussi est-il essentiel qu'on s'efforce par tous les moyens

d'alléger l'enseignement et les tâches administratives des jeunes membres de la faculté et, surtout, des cliniciens doués.

Par ailleurs, il faudrait aussi lever les obstacles afin de faciliter la collaboration entre les chercheurs cliniciens et non cliniciens des facultés. Il est grand temps qu'on se respecte de part et d'autre et que l'on collabore naturellement à des projets de recherches.

C'est seulement de cette façon qu'on parviendra à établir des programmes de recherches qui seront autant pertinents au point de vue clinique que valables au point de vue scientifique.

Relèverons-nous le défi avec succès?

Dr David Carmichael, Président,
Association canadienne pour la
recherche dentaire, et Président,
Comité de Recherche,
Université de l'Alberta.

Cet éditorial est une adaptation de "Viewpoint" (Optique) que le Dr Carmichael a fait paraître dans le Bulletin de l'Association des Facultés de dentisterie canadiennes (hiver 1979).

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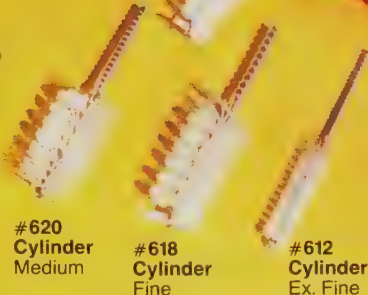
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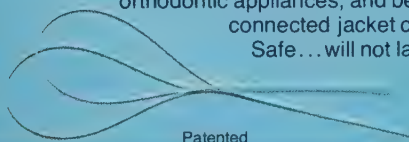
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PREVENTIVE DENTISTRY DEPENDS ON YOU AND YOU CAN DEPEND ON ORAL-B.

Prevention is the key

The "Economist's Perspective" by Professor Evans (CDA Journal, January, 1980) may mislead readers. Onlookers assume this is a player's view, authoritative and definitive. Not so.

Dr. Evans states "a balance is necessary. Since the cost of dental disease has two components, it is inefficient to minimize one alone." In his terms, cost is in two pieces — money and all that implies; and the departures from overall health. But what is this balance?

An increase in dental health is not obtained by input of money, nor does a decrease in dental health result from a decrease in money. No amount of "opportunity costs of resources" will re-attach a periodontal membrane or replace a missing tooth at the distal of a quadrant. Dental disease is not a reversible equation. Wealth and bankruptcy may be. The economic balance Dr. Evans is describing, a concept I find clumsy and misleading, is probably between the value owners put on their teeth and the degree of attempted restoration. As surely as night follows day, the Evans balance is followed by (a) conflict of interest; and (b) the need for some sort of public intervention.

The emotional defensive reaction of dentists serves only to make onlookers find his scheme more likely. In fact, we are, by legal precedents, forced *not* to set the Evans balance. When discussing treatment patterns with patients, failure to diagnose and/or inform of the existence of dental disease, and failure to recommend the best treatment, are grounds for a charge of negligence. So, in Evans' terms, the medical and dental professions have been in a conflict of interest state legally imposed over the last 800 years.

Furthermore, he hints that pres-

sing the values of oral health can be "an exercise in economically self-interested marketing." This is his interpretation of dental health advice — in contradiction to his own thesis. If dentistry does not press these values which are essentially preventive in nature, history has shown such values are seldom pressed. Prevention, by its very nature, is aimed at reducing disease and cost.

Dr. Evans postulated conflict of interest in relation to new measures of prevention — e.g. a caries vaccine. However, technological advances in dentistry over the last 30 years were produced by dentists, promoted by their associations and adopted by individual practitioners. Dentistry has been through this challenge many times and has not rejected any proven therapeutic measure.

Dr. Evans' "public intervention" idea is a circuitous way of suggesting New Zealand style dental nurse schemes. He perceived the need in economic terms. In New Zealand in the 1920's the scheme was based more on defence preparedness than economic motives.

Critics of dental nursing systems are concerned with efficiency. What use is it if the system is based on the daily output of amalgam/composite surfaces restored? It is by non-carious teeth that a successful scheme should be measured, not by filled teeth. Despite 60 years of dental nurses, the dental health of New Zealanders is not much better than before.

The solution to the high cost of dental services will come from better systems of prevention. The least successful system will be to create yet another set of treatment persons controlled by local or provincial bodies. Filling holes in teeth is in no way a satisfactory means of controlling dental disease.

Dr. Richard Roydhouse,
Professor,
Restorative Dentistry,
University of British Columbia.

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Sodium fluoride rinse

Composition: Contains sodium fluoride in a pleasantly flavoured neutral pH liquid. Contains alcohol (3% by volume).

Indications: Dental caries prophylactic.

Precautions: Limited to topical use in the mouth only. DO NOT SWALLOW. Excessive ingestion may cause nausea and excessive use may cause dental fluorosis.

Contraindications: Sodium-free diets.

Dosage and Administration: 1 to 2 teaspoons (5 to 10 ml) of Fluorinse is swished around vigorously in the mouth for approximately 1 minute and then expectorated. Recommended at bedtime, after brushing and flossing teeth thoroughly. For maximum benefit, patient should not eat or drink for a period of 30 minutes after rinsing.

How supplied: Fluorinse is available in 455 ml plastic bottles with child-resistant caps.

Weekly Rinse	Daily Rinse	Weekly Rinse
Cinnamon (red) 0.2% sodium fluoride	Ice Mint (blue) 0.05% sodium fluoride	Mint (green) 0.2% sodium fluoride

Caution: Keep out of reach of children.

FLOZENGES*

Sodium fluoride lozenges

Composition: Contains sodium fluoride in lozenge form. Contains no sugar, saccharin or cyclamate.

Indications: To help protect against dental caries, particularly for children through age 14.

Precautions: If this product is used in an area where the drinking water has a natural fluoride content in excess of 0.7 parts of fluoride ion per million parts of water, or is artificially fluoridated, fluorosis of the tooth enamel may result.

Contraindications: Sodium-free diets.

Dosage and Administration: FOR CHILDREN OVER 3 YEARS OF AGE: 1 lozenge daily, preferably at bedtime after brushing and flossing teeth thoroughly. Flozenge is slowly sucked and dissolved in the mouth. FOR CHILDREN 2 TO 3 YEARS OF AGE: 1 lozenge every other day, as above.

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Two flavours:	Orange	Strawberry
	0.5 mg of fluoride ion	1.0 mg. of fluoride ion

Caution: Keep out of reach of children. Exceeding recommended dosage over a prolonged period of time may be harmful.

References

- † According to the International Workshop on Fluorides and Dental Caries Reductions, School of Dentistry, University of Maryland, 1974: "...concentration of recommendable rinsing solutions ranges from 0.025% to 0.2%." (Page 140). Many available rinses do not meet this standard.
1. Confirmed by world-wide dental authorities (International Workshop, Maryland, 1974).
 2. Stephen KW. Campbell D: Caries reduction and cost benefit after 3 years of sucking fluoride tablets daily at school. *Brit. dent. J.* April 1978, 144-202.

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CCPP

CDA presents Health brief

The Canadian Dental Association was front and centre last month presenting a perspective on the dental health of Canadians to the Health Services Review Commission. CDA's president, Dr. Clyde Covit, spoke on behalf of the Association to Mr. Justice Emmett Hall, Commission chairman.

Other representatives of the Canadian Dental Association at the hearing included Dr. Gil Utas, president-elect; Dr. Rod Moran, past president; Hubert Drouin, executive director. Dr. John Stamm of McGill University was CDA's consultant for the report.

The dental health of Canadians has

improved significantly over the last 15 years because of the widespread use of fluoridation, prevention-oriented public health programs and improved access to dentists' care, stated Dr. Covit.

CDA also urged governments to encourage the continued development of privately administered, family-oriented, third-party dental payment plans to further increase the access to dental care.

Among its 11 recommendations, CDA's brief pointed out that the Canadian public should be given more complete information on health care expenditures.

"It is erroneous and unfair to attack

the various provincial medical and dental insurance plans as these have not been the major cause of increasing health care expenditures," said Dr. Covit. "Per capita payments for personal health services have not risen as rapidly as the consumer price index . . . (they) appear lately to represent a decreasing share of per capita GNP."

Efforts must be made to convince Canadians that the majority of dental diseases can be prevented. Educational programs should be linked to a system of positive incentives to encourage greater self-responsibility for good dental health, emphasized Dr. Covit. He added that provinces with less than 20 per cent of the population protected by community fluoridation programs should be singled out for special attention.

The CDA brief urged that a major study into current public policies on dental manpower be initiated and called for greater support of a more integrated and family-oriented dental care system to meet head-on the urgent need for preventive dental health programs in Canada.

April – National Dental Health Month

National Dental Health Month has arrived and "Good Mouthkeeping" is the message the dental profession is promoting across the country.

Each province has different activities planned for the April campaign with the national poster contest bringing Canadian school children together for one major event.

Specially prepared videotape recordings featuring puppeteer-ventriloquist Sheri Lewis, have been sent to CBC stations.

The 1980 NDHM campaign is on its way to becoming a success reminding Canadians that "Good Mouthkeeping" is a lifelong commitment.



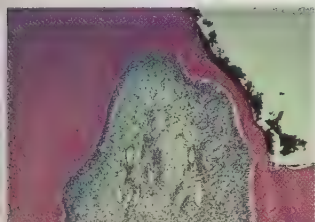
Commission chairman, Mr. Justice Emmett Hall, left, confers with Dr. Malcolm Taylor.



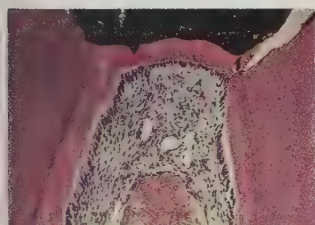
CDA spokesmen included Dr. Gil Utas, left; Dr. Clyde Covit; Dr. Rod Moran; and Dr. John Stamm.

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*Clinicals available on histological evaluations of Life pulp capping material:

"Histological Evaluation of Two Calcium Hydroxide Compounds on Inflamed Pulp," *Jour. Dent. Res.*, Vol. 56, p. A63, I.A.D.R. Abstracts #83, 1977.
R. J. Heys, D. R. Heys, C. F. Cox and J. K. Avery, Copenhagen, Denmark.
"Theories of Mechanisms of Dental Bridge Formation. Symposium I: Developments in Pulp Capping," 1978. *Jour. Dent. Res.*, Vol. 57, Special Issue A, p. 14, 1978. J. K. Avery, Washington, D.C.
"Histological Evaluation of Three Calcium Hydroxide Materials on the Dental Pulp," *Jour. Dent. Res.*, Vol. 58, p. 161, I.A.D.R. Abstracts #273, 1979. D. R. Heys, C. F. Cox, R. J. Heys, J. K. Avery and D. S. Strachan, New Orleans, Louisiana.

Patent pending

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Aqua-fresh is preferred

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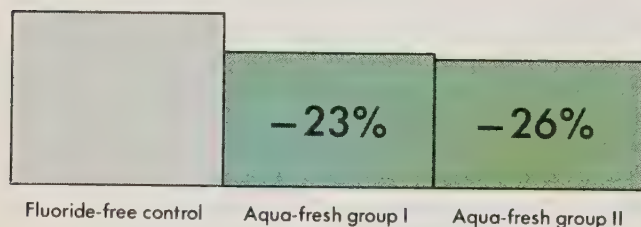


Tests conducted by an independent research organization prove that women significantly prefer double protection Aqua-fresh. And there are more good reasons to recommend Aqua-fresh:

Aqua-fresh™ is clinically proven to reduce caries.

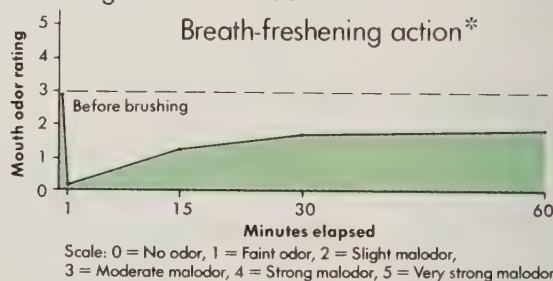
Aqua-fresh contains 0.8% sodium monofluorophosphate, a proven anti-caries fluoride system. Double-blind clinical trials have shown Aqua-fresh to be effective in reducing caries formation.

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rapport
annuel 1979**



chairman's report

The Chairman's comments which appeared in last year's annual report referred to the great concern of our Board of Trustees over the fact that donations to the Canadian Fund for Dental Education from members of the dental profession showed a marked decrease when compared to the previous year's contributions.

This year there is good news to report in this regard and my opening comments must indicate the Trustees' profound gratitude to our dental colleagues whose 1979 donations showed a 15% increase over 1978, a record breaking response in personal contributions. Both the number and average size of these personal gifts showed an increase, and our list of contributors contains many more "Honour Members", individuals who donated \$100 or more, including one dentist who forwarded a cheque for \$1,000.

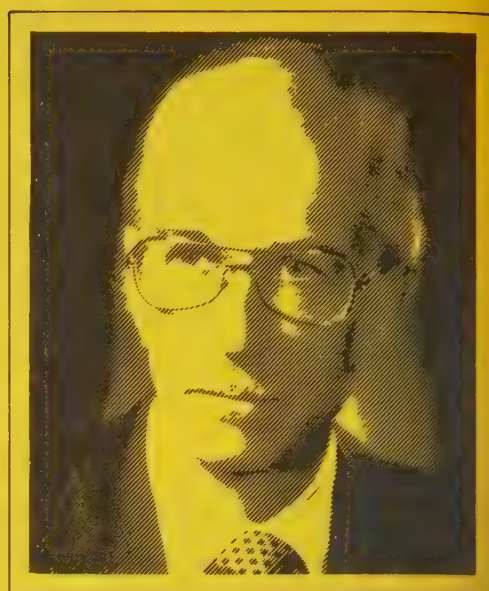
And there is more good news to report pertaining to our friends in business and industry whose contributions reached an all-time high with an 8% increase over the previous year.

The outstanding performance of these two major sources of income is most encouraging and will certainly enable your Trustees to do an increasingly effective job of building a stronger dental profession.

Reference to the financial statements on page 8 of this report shows income from all sources of over \$200,000, an increase of 13% over 1978, excluding special foundation and endowment income contributions which were non-recurring in 1979.

Page 9 gives full particulars on how your donations were invested. Your Trustees carefully consider all applications for support, and only those showing promise of significant benefit to the profession are approved.

At our 1979 annual meeting an Ad Hoc Committee was appointed to establish funding priorities for a five-year period. Chaired by Dr. J. W.



Neilson, work is still in progress and our Board looks forward to the recommendations of this group.

In 1979 a significant increase was recorded in the number and amount of "in memoriam" contributions to the Fund. The name of the deceased person is inscribed in our beautiful Book of Remembrance permanently displayed at CFDE headquarters and a thoughtfully worded "in memoriam" card is mailed to the bereaved family.

Perhaps your local Dental Society would consider securing a supply of these cards from our office which would then be available for immediate distribution in your locality as the need arises. I can think of no more sensitive or thoughtful gesture that will perpetuate the memory of a friend or colleague.

On behalf of the Board of Trustees, I express my deep and continuing gratitude to all who have so generously supported the aims and objectives of the Canadian Fund for Dental Education in 1979. Your Trustees will strive to maintain their record of serving the best interests of dental education, of organized dentistry and of the people we all serve in our profession. We have great expectations for the future. I am confident that your generosity will match our expectations and help us to fulfil them.

A handwritten signature in dark ink, reading "James A. Guest". The signature is fluid and cursive, with a large initial "J" and "G".

James A. Guest, D.D.S.

Le rapport du président

Les propos du président publiés dans le rapport annuel de l'an dernier portaient sur l'inquiétude considérable qu'éprouvait le Conseil des fiduciaires relativement au fait que les dons offerts au FCED par les membres de la profession étaient en diminution en regard de ceux de l'année précédente.

Aujourd'hui, bonne nouvelle à cet égard: je commencerai en relayant la profonde gratitude que témoignent les fiduciaires envers nos collègues, dont les contributions en 1979 faisaient preuve d'une augmentation de 15% en regard de 1978, battant ainsi tous les records en ce qui concerne les dons personnels. Le nombre aussi bien que l'envergure de ces dons personnels faisaient preuve d'augmentation et notre liste de donateurs inclut considérablement plus de "membres d'honneur", soit des personnes qui ont contribué \$100 ou plus, y compris un dentiste qui nous a fait parvenir un chèque de \$1.000.

Autre bonne nouvelle: nos amis du monde des affaires et de l'industrie ont également battu tous les records, avec une augmentation de 8% en regard de l'année dernière.

Ces réalisations sont des plus encourageantes et elles permettront à vos fiduciaires d'obtenir des résultats encore plus efficaces en ce qui concerne la robustesse de la profession dentaire.

Les états financiers à la page 8 du rapport indiquent que les revenus de toutes les sources s'élèvent à plus de \$200.000, une augmentation de 13% en regard de 1978, à l'exclusion d'un revenu spécial obtenu en 1978 en provenance d'une fondation et d'un fonds de dotation, recette que nous n'avons pas obtenue en 1979.

La page 9 détaille l'investissement de ces contributions. Vos fiduciaires étudient soigneusement toutes les demandes et n'ont approuvé que celles qui promettaient de produire les plus grands bénéfices pour la profession.

Lors de notre assemblée annuelle de 1979, nous avons formé un Comité ad hoc, dont la responsabilité était d'établir les priorités de financement pour une période de cinq ans. Sous la présidence du Dr J. W. Neilson, le comité est toujours à l'oeuvre et notre Conseil sera heureux de recevoir les recommandations de ce groupe.

Il y a eu, en 1979, une augmentation considérable du nombre et de l'envergure des contributions "in memoriam". Le nom de la personne décédée est inscrit dans notre beau livre "in memoriam", exposé en permanence au siège social du FCED et une carte de deuil, rédigée avec égards, est envoyée à la famille affligée.

Votre société dentaire locale pourrait éventuellement se procurer ces cartes à notre bureau, afin de les avoir sous la main immédiatement lorsqu'il y a lieu. Il me semble que l'on ne peut perpétuer la mémoire d'un ami ou d'un collègue de manière plus délicate ou plus sensible.

Au nom du Conseil des fiduciaires, je désire exprimer ma vive reconnaissance vis-à-vis de tous ceux qui ont si généreusement appuyé les objectifs du FCED en 1979. Vos fiduciaires feront tout leur possible pour maintenir le niveau de leurs réalisations passées lorsqu'il s'agit de servir les meilleurs intérêts de l'enseignement dentaire, de la médecine dentaire organisée et du public. Nous sommes très optimistes pour l'avenir. Je suis persuadé que votre générosité sera à la hauteur de nos attentes et que vous nous aiderez à les réaliser.



James A. Guest, D.D.S.

programs and people

programmes et participants

Your contributions enable CFDE to fund many programs that benefit the dental profession and consequently the public. On the next several pages are particulars of just some of these programs and comments by the people directly involved with them.

Vos contributions servent à financer de nombreux programmes dont bénéficient la profession dentaire et, en conséquence, le public. Nous allons présenter, dans les pages qui suivent, des détails portant sur quelques-uns de ces programmes ainsi que les commentaires offerts par les personnes qui s'en occupent.

Teaching Conferences / Congrès des enseignants



The 1979 Teaching Conference on "Clinic Administration in Canadian Dental Schools" proffers to be of considerable value. As young men and women graduate from our Faculties, attitudes which they have developed with respect to total patient care and practice administration, together with the role modeling which they might endeavour to emulate, could contribute substantially to a higher standard of professional practice.

Through the good offices of the CDA/ACFD and the generous financial support of the CFDE, representatives of the Canadian Faculties of Dentistry were given an opportunity to hear interesting approaches to the vital areas discussed. It is hoped that the content of the Teaching Conference will stimulate Faculty to review their present methodology, and if warranted, to initiate change so that the behaviour modification that is possible within students will take place to the ultimate benefit of the individual, the profession and society at large.

David T. Zack, D.M.D., M.S.D.
Director of Clinics
Faculty of Dentistry
University of British Columbia

Le Congrès des enseignants 1979, portant sur "la gestion des cliniques dans les écoles dentaires canadiennes" s'est avéré être de la plus grande utilité. Alors que les jeunes dentistes obtiennent leurs diplômes à nos universités, les attitudes qu'ils ont acquises relativement au traitement total du patient et à la gestion d'un cabinet, conjointement avec les modèles qu'ils essayeront d'imiter, pourront hausser considérablement les normes professionnelles.

Grâce aux bons offices de l'ADC/AFDC, ainsi qu'au généreux soutien financier du FCED, les représentants des facultés dentaires du Canada ont eu l'occasion d'entendre diverses manières d'aborder les importantes questions à l'étude. L'on espère que la teneur du Congrès des enseignants stimulera les facultés à passer en revue leur méthodologie actuelle et, s'il y a lieu, à mettre en oeuvre les changements qui rendront possible une modification du comportement chez les étudiants dont profiteront l'individu, la profession et le public.

David T. Zack, D.M.D., M.S.D.
Directeur des cliniques
Faculté dentaire
Université de Colombie
Britannique

Dr. Zack served as Chairman of the 1979 Conference.

Initially these meetings were held every second year. As indicated by Dr. Zack, they proved to be of such value the Fund Trustees voted to finance an annual Conference starting in 1973. To date \$27,000 has been devoted to this program.

Le congrès de 1979 était présidé par le Dr Zack.

A l'origine, ces assemblées avaient lieu tous les deux ans. Ainsi que signale le Dr Zack, les rencontres se sont avérées tellement utiles qu'à partir de 1973, les fiduciaires du Fonds ont opté pour le financement d'un congrès annuel. Jusqu'à présent, la somme de \$27.000 a été consacrée à ce programme.

Students' Conferences / Congrès des étudiants

The Canadian Dental Students' Conference is an extremely productive and necessary annual event. It is the only opportunity afforded the Canadian dental student to meet with representatives from across Canada to exchange ideas pertaining to clinical dentistry, academic and clinical research and dental curricula.

The conference also acts as a forum where common problems can be aired and, in turn, acted upon through the Council on Student Affairs of the Canadian Dental Association.

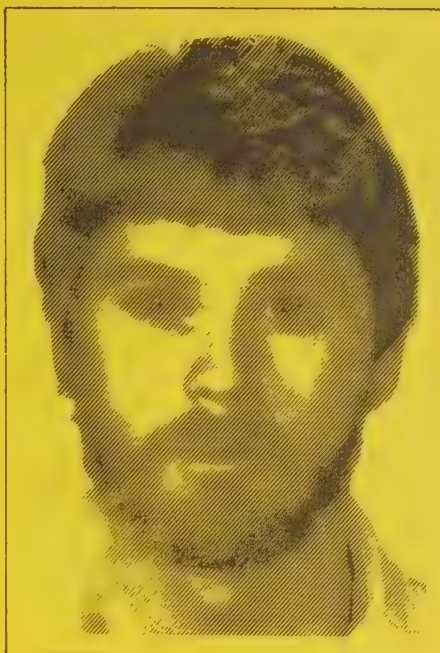
The CDSC also exposes the dental student to organized dentistry at both the provincial and national levels. This is one area of which most students do not have much knowledge. Various organizations and groups, both within the Canadian Dental Association and related to the CDA, have the opportunity to explain their role and responsibilities to the students and, in turn, this information is transferred back to the dental faculties through the student representative. In this way student awareness is enhanced and increased.

Dental students are the dentists of the future and it is important that they are aware of the role of organized dentistry in Canada.

The CDSC functions to make this possible and to point out to the students that they are members of the dental profession from the moment they enter dental school, not solely upon receipt of their diploma and licence.

David Baird

Chairman—CDSC 1979



Le Congrès canadien des étudiants dentaires est un événement annuel extrêmement productif. Il représente l'unique occasion qu'ont les étudiants dentaires canadiens de se réunir avec les représentants de tout le pays, pour échanger leurs idées se rapportant à la médecine dentaire clinique, à la recherche universitaire et clinique, ainsi qu'aux programmes dentaires.

Le congrès constitue également un forum dans le cadre duquel il est possible de discuter des problèmes communs et d'y donner suite par l'intermédiaire du Conseil des affaires des étudiants de l'Association dentaire canadienne.

Le CCED fait également connaître aux étudiants la médecine dentaire organisée, aussi bien à l'échelle provinciale que nationale. Il s'agit là d'un domaine plus ou moins inconnu pour la plupart des étudiants. Certains organismes au sein de l'Association dentaire canadienne, ainsi que divers groupes connexes ont ainsi l'occasion d'expliquer le rôle qu'ils jouent et leurs responsabilités aux étudiants et, par la suite, cette information est relayée aux facultés dentaires par l'entremise de l'étudiant représentant. Ainsi, le corps étudiant se familiarise avec tout ce qui se passe.

Les étudiants dentaires sont les dentistes de l'avenir et il est important qu'ils soient au courant du rôle que joue la profession organisée au Canada.

Voici l'objectif du CCED, qui souligne également que les étudiants font partie de la profession dentaire à partir du moment où ils commencent leurs études, et non seulement lorsqu'ils reçoivent leur diplôme et leur permis d'exercice.

David Baird

Président — CCED 1979

Mr. Baird is a fourth year dental student at the University of British Columbia.

The concept of an annual Students' Conference was developed by CFDE in 1969 and the first such meeting sponsored by CDA and financed by the Fund was held later that year. Conferences under similar arrangements have been held annually since then with CFDE now having provided total funding of \$44,000.

M. Baird, étudiant en médecine dentaire à l'Université de Colombie-Britannique, en est à la quatrième année de ses études.

Le FCED a élaboré en 1969 le concept d'un congrès annuel pour les étudiants, et la première de ces assemblées, parrainée par l'ADC et financée par le FCED eut lieu plus tard pendant cette même année. Des congrès organisés dans le cadre de dispositions similaires ont eu lieu tous les ans depuis et le Fonds a contribué un financement total de \$44.000.

Fellowships for Dentists / Bourses destinées aux dentistes

As a recipient of a Canadian Fund for Dental Education Fellowship, I welcome this opportunity to express in public my appreciation to the Fund for its aims and objectives.

CFDE has accepted the honourable dictum that highly trained educators are necessary to ensure the continuing well-being of our profession. The Fund actively illustrates this ideal by the solicitation of monies, which are then awarded to graduate students in dentistry wishing to pursue academic careers.

I am most grateful to the Fund, as its financial assistance allowed me to complete graduate training in Oral Pathology, and to undertake a research study of tumor development.

The Fund is demonstrating by its noble objectives and activities a continuing faith in the future of dentistry. I am sure that all members of the dental profession concur with the aims and ideals practised by the Fund. CFDE welcomes and indeed requires the active participation of the profession.

I would suggest that all dentists and ancillary personnel can make valuable contributions to the profession by giving every support and encouragement to the Fund, and ultimately to the advancement of Canadian dentistry.

John Hardie, B.D.S., M.Sc.
Associate Professor
Department of Oral Biology
University of Alberta



A titre de bénéficiaire d'une bourse d'étude du Fonds canadien pour l'enseignement dentaire, je suis très reconnaissant d'avoir l'occasion d'exprimer publiquement ma gratitude vis-à-vis du Fonds et de ses objectifs.

Le FCED souscrit au noble dicton, en vertu duquel il faut des enseignants qui ont eux-mêmes une formation supérieure pour assurer le bien-être continu de notre profession. Le FCED est l'illustration de cet idéal, car il sollicite des fonds qui sont ensuite octroyés aux étudiants post-universitaires désireux d'embrasser une carrière dans l'enseignement.

Je suis profondément reconnaissant envers le Fonds, car son appui financier m'a permis de terminer mes études post-universitaires en pathologie buccale et d'entreprendre des recherches dans le domaine de l'oncologie.

Grâce à ses nobles objectifs et activités, le FCED souligne sa confiance dans l'avenir de la profession dentaire. Je suis persuadé que tous les membres de la profession se rallient à ses idéaux. Le Fond a besoin de la participation active de la profession.

Je suggérerais que tous les dentistes ainsi que leurs collaborateurs contribuent au Fonds leur encouragement et leur soutien, menant ultimement à l'avancement de la profession dentaire au Canada.

John Hardie, B.D.S., M.Sc.
Professeur agrégé
Département de biologie buccale
Université d'Alberta

Dr. Hardie is one of 134 dentists who have received CFDE fellowships to help them complete their teacher training.

Started in 1964, this was the Fund's first program, and since then every dental faculty has benefited from it. In fact, at least twenty recipients now have senior responsibilities for their clinical discipline in their respective institutions.

In terms of dollars invested (\$574,000), it is the Fund's largest program and undoubtedly one that has yielded tremendous dividends.

Le Dr Hardie était l'un des 134 dentistes bénéficiaires d'une bourse destinée à les aider à terminer leur formation dans l'enseignement.

Mis en oeuvre en 1964, il s'agit là du premier programme organisé par le Fonds et, depuis, toutes les facultés dentaires en ont bénéficié. En fait, au moins vingt des bénéficiaires occupent aujourd'hui des postes supérieurs au sein des disciplines cliniques de leur institution respective.

En fonction des dollars investis (\$574.000), ce programme constitue le plus important d'envergure et il a indiscutablement rapporté des dividendes incomparables.

Scholarships-Fellowships for Hygienists / Bourses pour les hygiénistes

As the 1970's come to a close, the dental hygiene profession may reflect upon ten years of rapid progression in terms of numbers of practising hygienists, quality and extent of preventive services provided, and public acceptance as an entity of the dental profession.

These changes did not "happen", rather they resulted from dedicated efforts of dental hygienists moving into educational and administrative positions within the university and community college programs.

Many hygienists have prepared themselves for an educating role via part-time studies in the science and education disciplines. At long last, Canada has a post-graduate program for dental hygienists, namely the Bachelor of Science in Dentistry program at the University of Toronto, which is available to hygienists from across Canada for further educational study.

Hopefully, similar programs will be developed within other universities in Canada to improve the availability of this type of education.

CFDE has recognized the contribution of this program to the dental hygiene and dental professions within our country. Furthermore, the Fund has provided fellowships for dental hygienists engaged in the two-year post-hygiene program to assist the financing of full-time studies.

On behalf of the B.Sc.D. program at the University of Toronto and as the Education Chairman of the ODHA, may I extend sincere appreciation to CFDE for its investment in people.

Helga Dettbarn, R.D.H., B.Sc.D.
Department of Preventive Dentistry
University of Toronto

Alors que les années '70 tirent à leur fin, les hygiénistes dentaires peuvent songer à la progression rapide des dix dernières années, en ce qui concerne le nombre d'hygiénistes qui exercent leur profession, la qualité et l'envergure des services préventifs offerts, ainsi que l'acceptation publique des hygiénistes à titre d'entité dans le cadre de la profession dentaire.

Ces changements ne sont pas simplement "survenus", mais ils sont plutôt le résultat des efforts incomparables faits par les hygiénistes, qui ont progressé pour aboutir à des postes d'enseignants et d'administrateurs au sein de programmes dans les universités et les collèges communautaires.

De nombreuses hygiénistes se sont préparées à occuper un rôle dans l'enseignement en faisant des études à temps partiel dans les disciplines de la science et de

l'éducation. Le Canada a finalement un programme post-universitaire destiné aux hygiénistes dentaires, soit le programme "Bachelor of Science in Dentistry" à l'Université de Toronto, ouvert aux hygiénistes de tout le Canada en vue d'approfondir leurs connaissances dans le domaine dentaire. On espère que d'autres programmes de ce genre seront mis en oeuvre à diverses universités canadiennes, afin d'amplifier la disponibilité de cet enseignement.

Le FCED a reconnu la contribution que fait ce programme aux professions de l'hygiène et de la médecine dentaires. Le Fonds a également octroyé des bourses aux hygiénistes dentaires inscrits au programme de post-hygiène de deux ans, pour les aider à financer des études à plein temps.

Au nom du programme de B.Sc.D. de l'Université de Toronto et à titre de présidente du conseil de l'éducation de l'O.D.H.A., je désire remercier sincèrement le FCED pour l'investissement qu'il fait dans l'avenir.

Helga Dettbarn, R.D.H., B.Sc.D.
Département de médecine
dentaire préventive
Université de Toronto

Ms. Dettbarn was awarded a CFDE fellowship in 1977 to help complete her training. Twenty-five hygienists, living in all parts of Canada, have received similar awards.

During the years 1970 through 1974, CFDE offered scholarships for dental hygiene students. Recognizing the growing need for highly trained dental hygiene teachers, the CFDE Trustees, with the agreement of the CDHA Executive, decided in 1975 to replace the scholarships with a fellowship program for prospective hygiene teachers.

Contributions from hygienists and hygiene associations have greatly helped to provide the \$37,000 needed for these two programs.

En 1977, le FCED a octroyé à Mlle Dettbarn une bourse destinée à l'aider à terminer sa formation. Le Fonds a décerné à vingt-cinq hygiénistes, vivant dans toutes les provinces canadiennes, des subventions similaires.

Pendant les années 1970-74, le FCED offrait des bourses d'études aux étudiants en hygiène dentaire. Reconnaissant le besoin de former des enseignants hautement spécialisés dans cette discipline, aux termes d'un accord avec l'exécutif de l'ACHD, les fiduciaires du FCED ont décidé en 1975 de remplacer les bourses octroyées aux étudiants par un programme de bourses destinées aux futurs enseignants d'hygiène dentaire.

Les dons en provenances des hygiénistes ainsi que des associations d'hygiénistes ont considérablement contribué au financement des \$37.000 nécessaires pour subvenir à ces deux programmes.



1979 income by source

sources des revenus

Business and Industry Commerce et industrie	\$ 81,918	38%
Dental Profession Profession dentaire	\$ 70,610	33%
Investment and Sundry Income Revenus de placements et de sources diverses	\$ 48,193	22%
Dental Organizations Associations dentaires	\$ 15,347	7%
TOTAL	\$216,068	100%

indicators of progress

indicateurs de progrès



Personal Contributions from the Dental Profession

Contributions personnelles en provenance
de la profession dentaire

Contributions from Business and Industry

Contributions en provenance
des entreprises et de l'industrie

These programs
helped to build
a stronger
Dental
profession
in 1979

Les
programmes
ont renforcé
la profession
dentaire
en 1979

Teacher Training Fellowships (Dentists and Dental Hygienists) Bourses de formation en enseignement (Dentistes et Hygiénistes dentaires)	\$ 53,272	42%
Grants to Dental Schools Subventions aux écoles dentaires	\$ 10,000	8%
Student Table Clinics and Conference Conférence et cliniques sur table des étudiants	\$ 9,924	8%
Lorne E. MacLachlan Endowment – Teacher Training Awards Dotation Lorne E. MacLachlan – Bourses pour la formation d'enseignants	\$ 9,625	8%
P. G. Anderson Memorial P. G. Anderson Mémorial	\$ 6,739	5%
Research Project – University of Toronto Projet de recherche – Université de Toronto	\$ 5,917	5%
RCDC–CDA Symposium Symposium CRDC–ADC	\$ 5,000	4%
Scholarships for Dental Students Bourses destinées aux étudiants dentaires	\$ 5,000	4%
Dental Teaching Conference Conférence sur l'enseignement dentaire	\$ 4,000	3%
Radiation Barrier Research Recherche sur la protection contre la radiation	\$ 2,500	2%
Sundry Awards Octrois divers	\$ 7,014	5%
	\$118,991	94%
Invested in Income-Producing Securities Valeurs productives d'intérêt	\$ 7,333	6%
TOTAL	\$126,324	100%

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L'on peut obtenir, sur demande, une copie du rapport des vérificateurs.

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Tous nos regrets

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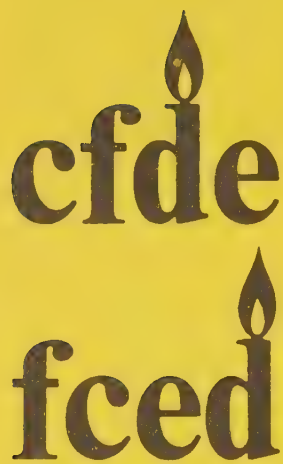
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Dental research future "disasterous"

There is little incentive for dental researchers in Canada beyond an inner sense of motivation, Dr. John Stamm, professor, Faculty of Dentistry, McGill University, commented recently on the state of the science of dental research in this country. Dr. Stamm is also chairman of the Fellowship Committee of the National Health Research and Development Program, National Health and Welfare.

Almost all dental research in Canada is conducted at one of the ten faculties of dentistry. There is no national institute, such as exists in the United States, for dental research although money for specific projects is available from the Medical Research Council (MRC) and National Health and Welfare. Grants are sometimes available through university budgets and limited funds for general scientific research can be obtained from the International Development Research Centre (IDRC), Ottawa, a public corporation established by an Act of Parliament in 1970 to support science and technology research adapted to suit the specific needs of developing countries.

There is also an archaic and unofficial grant system of "robbing Peter to give to Paul." At the University of Toronto, for example, where research work has been threatened by provincial government cut-backs, Faculty of Dentistry dean, Dr. Richard Ten Cate, juggles available funds to allocate dollars for both teaching and research.

"If I have a budget of one million dollars, for example, said Dr. Ten Cate, "I'm forced to take money from that to finance research which inevitably, comes at the expense of teaching."

Dr. Ten Cate's statements on the difficulties of financing researchers

are underscored by Dr. Stamm who feels that university administrators are in a bind because while they want research projects conducted at their institutions, they cannot afford to hire extra staff and make genuinely full-time projects logistically or economically possible.

While grants cover specific research work, there is no salary portion to MRC funds. Neither are researchers relieved of many, if any, teaching duties. This means that in undertaking research projects, faculty members are adding to their work load, a fact that discourages some potential researchers from entering the field. Opportunities for promotion are not enhanced by the completion of specific research work. In Canada, the 'publish or perish' cycle is not the force it is in other parts of the world.

Dr. Ten Cate knows of Canadian academics who are not permitted to

"What we need is new blood... those who will say 'nothing will stop me'."

do the research work they would like to conduct and for which they are qualified, because of teaching commitments. The 'Catch 22' of the situation, as Dr. Ten Cate sees it, is that the first and foremost responsibility of the university is to advance knowledge but, without on-going research commitments the calibre of teaching will suffer in the long run.

The University of Toronto's Dr. Tony Melcher is one of the more fortunate researchers in the country. Currently working under a five-year MRC grant, Dr. Melcher still expresses grave concern for the dental research situation.

"The progress of dental science in

Canada is dependent on the training of good dental scientists, both dentists and others interested in the field," he said. "If we don't take some definite steps to provide proper employment possibilities and a career structure, we're courting disaster in terms of dental research and ultimately, in the loss of the good dental academics."

Dr. Melcher agrees that the greatest force behind a researcher is the personal motivation to know — and to follow through on that new-found knowledge. He agrees that some schools do try to create a climate conducive to research work, but, he estimates, it takes ten years for researchers to establish themselves and many are not given this opportunity to develop academically.

"What we need is new blood," he said, "those who will say, 'nothing will stop me'."

Last year (see CDA Journal, October, 1979), the Canadian Dental Association expressed concern about the low level of federal funds available for dental research. At that time, the Association highlighted the needs for dental research manpower, a career structure for researchers and adequate grants-in-aid. Through meetings with National Health and Welfare, CDA spokesmen were able to draw a commitment for additional support for dental research in Canada.

Still, without further financing, the future looks gloomy. The spring, 1980 Newsletter of the Association of Canadian Faculties of Dentistry emphasizes that this lack of financial support is a serious threat to the very existence of dental research in Canada.

Perhaps the last word belongs to Dr. Ten Cate. "In the '60's there was a recognized need on the part of governments and universities to train research people in Canada. Universities had the dollars and it looked like there was a future for research in Canada.

"Now, unless we're careful, things will be back to where they were before the 1960's with no long-range planning possibilities available. Graduates with PhD and DDS degrees just won't come forward to do research work."

Manitoba children's dental program report

Table 1
M.D.A. Children's Dental Health Program
End of the first year
30 November 1979

# School Division	Children Eligible	Children Enrolled by M.D.A.	% of Eligible Enrolled	Children Treated	% of Enrolled Treated	Cost of Treatment \$	Cost Per Treated Child \$	Cost Per Eligible Child \$
11 Lord Selkirk	1174	1045	89.01	935	89.47	\$ 78,854.90	\$ 84.34	\$ 67.17
13 Agassiz	646	586	90.71	534	91.13	60,597.80	113.48	93.80
15 Hanover	1139	1070	93.94	1009	94.30	105,641.20	104.70	92.75
21 Interlake	741	675	91.09	607	89.93	53,664.30	88.41	72.42
33 Dauphin-Ochre	542	530	97.79	522	98.49	61,859.50	118.50	114.13
35 Swan Valley	599	569	94.99	545	95.78	63,286.20	116.12	105.65
36 Intermountain	443	440	99.32	418	95.00	50,867.90	121.69	114.83
44 Turtle Mountain	253	252	99.60	248	98.41	33,424.40	134.78	132.11
45 The Pas	447	387	86.58	347	89.66	39,861.90	114.88	89.18
46 Flin Flon	403	348	86.35	324	93.10	29,463.10	90.94	73.11
Totals	6387	5902	92.41	5489	93.00	\$577,521.20	\$105.21	\$ 90.42
In School Exams						\$ 26,760.00		
Administration						41,361.49		
						\$645,642.69		

In November, 1978, the Manitoba Dental Association (MDA) accepted the challenge of demonstrating that private practice was the most cost effective and efficient way to present a children's dental program in the Province of Manitoba. Private practice dentists accepted the challenge and have shown that private practice is enterprising, resourceful, productive and competitive. No excuses of time constraints, administrative difficulties or appointment scheduling, were made.

Statistics of the MDA Program to the end of the first year (November 30, 1979) show that 5,902 of 6,387 eligible children (92.41 per cent) are enrolled and that treatment, in a dentist's office, was provided for 5,489 children (93.0 per cent of those enrolled) at a cost of \$90.42 per eligible child. (Table 1). To our knowledge there is no children's program in North America that is either private practice based or Government administered, that has achieved the success of the MDA program.

The good results are attributed to the willingness of dentists to go into the schools to screen the children and to actively encourage parents to bring their child to the dentist's office.

Without exception, the adult population, in the ten School Divisions involved has received the same continuing care and access to the dentist's office as before the MDA assumed responsibility for the children's program. In fact, adults have, in some School Divisions, received better access because dental offices have opened in their communities (Boissevain, Roblin, Lac du Bonnet, Stony Mountain and Teulon). Projections about the expected increase in the number of dentists over the next five years and a levelling-off of the total population in Manitoba indicate more satellite offices will open and access to dentists will be even greater in the future. (Table 2).

Obituaries/ Nécrologies

COLE, Edgar Newman died February 15, 1980. He was born in Portage la Prairie, Manitoba. Dr. Cole was a Rhodes Scholar and a graduate of the Royal Military College, Kingston, Ontario. In World War II he was a demolition expert overseas. He graduated from the University of Toronto in 1953 and was awarded the Mary Adele Daly Gold Medal for Children's Dentistry.

He earned a B.Sc from the University of Manitoba in 1958 and an M.Sc (honors) in Anaesthesiology from the University of Pittsburgh, in 1962. Chief of Dental Service at Deer Lodge Hospital, Winnipeg, until his death, Dr. Cole

was an associate professor in dentistry at the University of Manitoba.

Dr. Cole was appointed an honorary special constable on December 15, 1979, by the RCMP, "S" Division, in recognition of his many years of service in the field of Forensic Dentistry.

Colleagues at the University of Manitoba have established a Memorial Fund in his name. The fund is to be awarded annually to the third year dental student who has excelled in the field of general anaesthesia.

WOODS, William Gerard, died February 10, 1980 in Toronto, Ontario.

KICKHAM, James Francis, died January 28, 1980 in Kitchener, Ontario. Graduated University of Toronto, 1931. Practised dentistry in Kitchener for 40 years.

(For 1979, it was predicted there would be 435 dentists licensed in Manitoba. . . In fact, there were 432 dentists licensed that year.)

The introduction of team dentistry in the Province, with dentists utilizing dental assistants, hygienists and nurses, means more patients can be treated. Dentists supervising their auxiliaries, while they provide dental care, is the corner stone of the private practice system.

The concern of the Manitoba Dental Association is for the good dental health of everyone in the Province. That concern has led to a flexibility of appointment scheduling so that children could be seen after school, on Saturdays and during teacher in-service days. Parents have accepted the responsibility of taking their children to the dentist's office.

Continuity of care in dentists' offices throughout the developing years and into adulthood will, in time, produce a population with exceptionally good dental health and the knowledge of how to maintain their mouths.

The Manitoba Dental Association encourages in-school oral hygiene instruction and fluoride rinse programs, as an excellent cost-benefit re-inforcement to the Children's Dental Health Program.

Statistics for the first year of operation and the enthusiasm of private practice dentists, indicate the Manitoba Dental Association should have still greater involvement in the delivery and administration of the entire Children's Dental Health Program in Manitoba.

C.E. Conference

In response to the need to outline the role of the Canadian Dental Association in Continuing Education, CDA organized a C.E. Conference last month in Ottawa.

Close to 40 interested participants from across Canada joined in the day-long meeting, "Coordination, Development and Administration," which addressed current issues surrounding Continuing Education in this country and possible future roles of CDA. The Conference was attended by Provincial Continuing Education chairmen and representatives of corporate members, provincial registrars, faculties, specialty groups and the NDEB.

Six recommendations developed from the three working sessions during the day — That:

- CDA should develop a set of national guidelines for sponsors of Continuing Education.

- CDA develop a clearing house for course materials, audiovisual materials, information about speakers, etc.

- CDA interact with governments to obtain financial support for Continuing Education in the form of tax relief or direct funding.

- the Council on Education be encouraged to include Continuing Education programs in the review process for dental faculties.

- CDA continue to assist in coordinating Continuing Education programs.

- the Ad Hoc Committee on Continuing Education become a Standing Committee of the Council on Education.

A full report of the proceedings is being prepared by the Conference facilitator, Robert Gobert of the University of British Columbia, Division of Continuing Education in the Health Sciences.

Table 2
Province of Manitoba: Population/Dentist Ratios, 1958 - 1990

Year	Population ¹ 000's	No. of Dentists ²	Population/ Dentist Ratio
1958	875.0	246	3,557
1963	949.0	281	3,377
1968	971.0	293	3,314
1973	998.0	333	2,997
1974	1,011.0	350	2,889
1975	094.9	365	2,726
1976	995.4	381	2,613
1977	996.0	399	2,496
1978	996.7	417	2,390
1979	997.7	435	2,294
1980	998.7	455	2,195
1981	999.9	475	2,105
1982	1,001.2	497	2,014
1983	1,002.2	519	1,931
1984	1,004.0	542	1,852
1985	1,005.2	567	1,773
1986	1,006.1	592	1,699
1987	1,006.7	619	1,626
1988	1,007.0	647	1,556
1989	1,006.8	676	1,489
1990	1,006.2	706	1,425

1. Source: Statistics Canada, "Population of Canada by Provinces, Estimated for Intercensal Years". Statistics Canada, Population Projections

2. Source: C.D.A., Number of dentists licensed to practise by province of licensure (at January 1) projections for 1976 - 1990 have been made by assuming an annual increase of 4.5 percent in the number of dentists. (This percentage was derived by taking the average rate of increase during the last five years.)

Personality test study

A nationwide study to assess the personal interview in the selection of dental students has begun in Canada. The purpose is to either validate or dismiss the interview as an instrument in selecting prospective dentists.

Under the leadership of the Canadian Dental Aptitude Test Committee, with support from the Ontario Dental Association, the 11 year study will establish and validate a standard interview for use by Canada's dental faculties.

Dr. Walter Teteruck, Committee chairman, said two dental schools in Canada and a number around the world use the interview method in screening applicants, but no group has ever studied the validity of this technique on a national basis.

Currently, Canada's eight dental faculties use three traditional methods for selecting dental students: undergraduate academic performance, Dental Aptitude Test scores and rating of the Chalk Carving Test.

The remaining two faculties, Toronto and Alberta, have been using the interview technique, along with the traditional methods, since 1975 and 1979, respectively.

Teteruck points out the traditional methods measure intellectual and manual dexterity, but not the "undesirable, non-cognitive traits."

One of the four examinations in the DAT program is the 16 Personality Factor Questionnaire. Dental students answer 16 questions designed to reveal their personality traits.

However, the scores from the 16 PF Questionnaire are not mailed by the CDA to universities as part of their admissions procedure. Teteruck said since the test has not been fully validated scores are only



DAT Committee members grade chalks — a current aspect of the Dental Aptitude Test.

used by the Committee to study personality testing.

He said the 16 PF Questionnaire is an impersonal way of assessing a person's character. Often students "put their best foot forward" in a verbal situation.

In recent years, dental schools and members of the profession, he explained, have voiced the need for some way to assess applicants' personalities.

American studies of medical students indicate academic excellence does not guarantee professional excellence. They found above average medical students were more inclined to select specialties where little patient interaction was required. As well, these same individuals were often more narrow in their chosen interests, less adaptable to change, less articulate and less comfortable in interpersonal relationships than their lower ranking peers.

Many dental faculties recognize the difficulties in measuring such intangible factors and have chosen to ignore this area or make it a low priority.

Teteruck said this study offers faculties a standardized interview format which has been thoroughly analyzed for its effectiveness.

There are essentially eight different characteristics considered important by dental schools. They are:

motivation, self-appraisal, ability to relate to others, maturity, adaptability, sense of responsibility, principles and personal reaction. Teteruck said the current study will attempt to incorporate these eight characteristics into the interview as well as determine its effectiveness in measuring these points.

The study began December, 1979 and continues until 1990.

The University of British Columbia is the first faculty to participate. There, prospective dental students will be screened in February, 1980 for fall classes using the traditional methods and the personal interview.

After each personal interview, the interviewer fills out a rating sheet assessing the student on pre-determined criteria.

The committee will review the UBC pilot program from April to July, 1980 and will deal with problems at that time.

Phase II of the study begins July, 1980. All Canadian dental faculties will be asked to participate by using the interview procedure as part of their admissions procedure. Teteruck said to date five faculties have expressed interest.

The second phase of the assessment will take place over 10 years and follow students from dental school right into the profession.

UIC "discriminates" says CDHA

More than half of Canada's full-time dental hygienists are not eligible for Unemployment Insurance benefits because of a change in UIC legislation, said an official of the Canadian Dental Hygienists' Association.

Chairman of CDHA's Manpower and Utilization Branch, Elaine Good, said the January 1979 amendment to the Unemployment Insurance Regulation, Section 54, discriminates against hygienists who work full-time, but in different offices.

The amendment states: "Employees paid in whole or in part on a time worked or fixed salary basis must be employed by one employer for at least twenty hours in a week in order to be insurable (paragraph 54 (1) (a))."

"Usually one dentist can't keep a dental hygienist busy fulltime," Good said many hygienists must work at different dentists' offices to put in a five day week.

Good does not know the number of hygienists across Canada who are affected by this legislation, but in her own region — Waterloo-Wellington Dental Hygienists' Association (Ontario) — she estimates about 50 per cent of hygienists do not qualify for UIC, as a direct result of the amendment.

Although UIC payments are not a priority issue for many hygienists, maternity leave and sick leave benefits are important.

About 75 per cent of Canada's dental hygienists are under 30 years old. Of that percentage, over 95 per cent are women.

According to UIC regulations, pregnant women are eligible for maternity leave before and after the baby is born. In the case of sick leave, employers are only required to pay employees for a pre-deter-

mined number of weeks and then UIC takes over.

... insurance companies are not a long-term solution ...

Last winter the CDHA asked members to write their local MPs and the federal immigration minister outlining their dissatisfaction with the amended legislation. Good said it is almost impossible to gauge the effect of this move, but so far "the response hasn't been terribly encouraging."

Dalhousie Assembly

The theme for Dalhousie University's Post College Assembly, scheduled May 11, 12 and 13, 1980 is "Pain." Guest speakers Dr. Ronald Melzack, McGill University and Dr. Jim Mumford, University of Liverpool, will discuss aspects of pain as it relates to dentistry.

Supporting clinicians from Dalhousie University include Dr. Ian Purkis, Dr. Tom White and Dr. Ed Hannigan.

At the Assembly, Melzack's presentations will be the "Neurophysiology of Pain" and "Current Concepts of Pain Modulation." Mumford will lecture on "Differential Diagnosis of Orofacial Pain" and "Management of Orofacial Pain-Odontogenic."

Post College Assembly is an annual Continuing Education event at Dalhousie University held in conjunction with the Convocation of the Faculty

The government is currently reviewing the UIC legislation. Until positive changes are made, she said, many hygienists must turn to private insurance companies for similar benefits. She states insurance companies are not a long-term solution. UIC requires the employer pay 1.4 times the amount paid by the employee whereas with an insurance company the responsibility rests on the policyholder to pay the entire premium.

In January, 1980, the Canadian Dental Hygienists' Association, through a mail ballot to all members, released a policy statement outlining their views on the amendment to the Unemployment Insurance Regulation, Section 54.

Good said the next step is to present this statement to the Federal Government's Manpower and Immigration department.



Dr. Ronald Melzack

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CDA Board Report

Interim meeting

"The Canadian Dental Association will continue to build on the principles which have been developed by our profession, to implement policies . . . and to serve as the voice of dentistry in Canada to entrench the concept of professionalism we have worked so hard to achieve," said Dr. Clyde Covit, CDA's president in his opening remarks to the Board of Governors at the Interim Board meeting last month.

The meeting, chaired by Dr. Nick Mancini, was held March 7 and 8 in Ottawa. Highlights follow:

SMALL BUSINESS TAXATION — BILL C-17

Dr. Robert Hicks, chairman of the Taxation Committee, reported to the Board that prior to the recent changing of hands in the Federal Government, the Conservative amendment to the Small Business Deduction (which reduced a proposal of 50 per cent taxation to a 33 1/3 per cent taxation rate for management companies and corporations associated with dentists, physicians, lawyers, accountants, veterinarians and chiropractors) was passed in the House of Commons and has received Royal assent.

FINANCIAL STATEMENT

The Financial Statement of the Canadian Dental Association for the year ending December 31, 1979 will be published in the May, 1980 issue of the Journal.

MEMBERSHIP FEES

The Board of Governors agreed to an Executive Council recommendation that the fees for CDA active and affiliate members be increased by \$75.

President-elect, Dr. Gil Utas, emphasized that the fee increase from \$125 to \$200 is required to maintain



CDA Board of Governors meets in the shadow of the Hill.

the level of membership services available and expand the program activities of the Canadian Dental Association.

A letter from the president, recently sent to the membership, has outlined details.

1980 MEMBERSHIP CAMPAIGN

It was announced that as of the third of March 4,324 dentists in Quebec and Ontario had joined the Canadian Dental Association. A month before the end of the 1980 campaign, this represents an increase in memberships over the 1979 total.

CAASI

The Dental Accident Claim Form was approved. It was noted that this form was accepted by CAASI after negotiations between the insurance representatives and CDA spokesmen, Dr. Clyde Covit and Dr. Robert Sexton, chairman of the Council on Health Care.

CDSPI

The new Board of CDSPI held its first meeting January 11. Complete information about the recent reorganization in the composition of CDSPI was released to the membership in a Communiqué. The new director of Plans is Cyril Gallant, CLU, who has had more than 30 years' group insurance and administration experience. Dr. Roy Rasmussen is the new chairman of the

Board. The Management Committee consists of Dr. John Durran, president and chief executive officer of CDSPI, Dr. Rod Moran, secretary and Dr. Melvin Charendoff.

HEALTH SERVICES REVIEW COMMISSION

Dr. Covit outlined the involvement of the Canadian Dental Association in preparing a submission to the Hall Commission on the health care of Canadians (see insert at front of Journal). He pointed out that the CDA brief, for which Dr. John Stamm of McGill University acted as a consultant, looked at expenditures in dental health care, privately and publicly-funded third party plans, school programs and dental nurses and the importance of access to dental care. Dr. Covit said that the CDA brief addressed the issue of declining morale in the dental profession and how this could eventually affect the quality of dental health care.

Copies of the full CDA brief including statistical information are available on a limited basis from the Association.

CDA CONVENTIONS

The Board of Governors agreed that the Canadian Dental Association Convention registration fee will be higher for Canadian dentists who are not CDA members. Foreign dentists with current membership in

CDA Board Report

their respective associations will be accepted at the same fee as CDA members.

INFORMATION SERVICES

It was announced that Dr. Michel Carvonis of Hull, Quebec will take over as National Dental Health Month chairman. He replaces Dr. Don Scramstad who has been involved with NDHM for the past five years and has ably served CDA as NDHM chairman during that period.

Five new pamphlets have been proposed for the coming year and another ten are in various stages of production.

DENTAL MATERIALS AND DEVICES

The Council reported it was involved with the preparation of five Canadian standards on dental products through the Canadian Standards Association (CSA) technical committee on dentistry.

The Council reviewed an "alert letter" at the request of the Health Protection Branch, National Health and Welfare, concerning problems that may be encountered in using Dispersed Phase Amalgams. This letter will be mailed directly to all dentists by the Health Protection Branch.

In an attempt to determine to what extent mercury contamination is a problem in dental offices, the Council on Dental Materials and Devices is taking steps to obtain mercury monitoring equipment to survey dental offices across Canada. With a technician and equipment from Health and Welfare, Council members will supervise surveys in their immediate locales.

CFDE

The criteria for awarding teaching fellowships awarded through the Canadian Fund for Dental Education (CFDE) are being studied because of the decrease in the number of teaching positions available. This circumstance makes it difficult for a fellowship applicant to obtain the

presently required teaching commitment of at least two and preferably four days a week.

Members of the dental profession donated more than \$70,000 to the CFDE in 1979. Gifts from business and industry totalled nearly \$82,000 and "In Memoriam" donations amounted to more than \$9,000.

CFDE provided over \$120,000 for 16 different programs to advance dentistry, in 1979.

CONSTITUTION AND BY-LAWS

The Board of Governors approved the amendment to the CDA's Letters Patent and By-laws to delegate the functions of the Council on Insurance and Investment to the Canadian Dental Service Plans Inc. (CDSPI). The agreement between CDA and CDSPI is to be reviewed annually by the Board and CDSPI.

In the area of Membership, the Board agreed that a specialist licensed in the Province of Quebec and a member of the Order of Dentists of Quebec becomes an active member in the Canadian Dental Association after paying the annual fee.

FDI

Dr. Covit was named CDA's National Treasurer to FDI for this year and both he and Dr. Moran were appointed CDA delegates to the fall FDI meeting in Hamburg, Germany.

The FDI Supporting Membership Fee for 1980 was agreed upon at \$30 (\$55 including the FDI Journal). FDI fees are payable to CDA.

HOSPITAL SERVICES

Representatives of the Canadian Dental Association Council on Hospital Services will be involved in a pilot project to develop joint accreditation procedures between CDA and the Canadian Council on Hospital Accreditation (CCHA). The first joint survey is scheduled for the Dr. Charles A. Janeway Child Health Centre, St. John's, Newfoundland this spring.

The Board of Governors approved the Standards and Guidelines for

Hospital Services. Copies are available from CDA.

ETHICS

The Council on Ethics presented a statement on "retail dentistry" to the Board for information. Basically, the Council on Ethics "feels that although the location of a practice within a retail outlet is not per se unethical, it would be prudent for any dentist contemplating practising in a retail outlet, to carefully consider both the ethical and legal implications of any such relationships." The concern of the Council was with potential ethical violations which may arise when close contractual links bearing on the practice of dentistry are forged between a dentist and a commercial organization.

The Board also discussed the Council's work on the CDA Code of Ethics which will be presented in its final form at the September Board of Governors' meeting.

HEALTH CARE

The Canadian Dental Association allotted approximately \$2,000 to the Sub-committee on Dentistry for the Handicapped meeting to study more effective ways of delivering dental care to the handicapped. Another meeting of the Sub-committee is scheduled to be held later this year.

RESOURCE CENTRE

One of the areas in which the Canadian Dental Association will grow in its ability to serve the dentists of Canada is in the development of a major resource centre at CDA headquarters.

The Association will gather and catalogue information in areas such as Peer Review and Continuing Education to provide the vehicle for discussions with the licensing bodies, provincial associations and other interested parties. Further material of interest to the membership at large may be assimilated into the system as it develops over the coming months.

Accreditation

The American Dental Association has become a corporate member of the Joint Commission on the Accreditation of Hospitals.

Since 1957, ADA has attempted to gain official recognition by the Joint Commission, said Dr. John Coady, ADA executive director. At its December 15, 1979 meeting, the JCAH Board of Commissioners granted corporate membership and one voting seat to the ADA.

The ADA Board of Trustees, during its December 16-18 meeting, accepted the JCAH's offer.

"The American Dental Association is pleased that the Joint Commission on Accreditation of Hospitals has formally recognized the profession of dentistry by extending an invitation for corporate membership within the JCAH," said Coady.

"The decision of the members and Board of the JCAH to expand its corporate structure by the inclusion of dentistry is a significant milestone which recognizes the professional community of interests responsible for patient care. The ADA truly believes in the concept of voluntary accreditation and is pleased to join forces with the JCAH for the sole purpose of ensuring high quality care," he continued.

Although ADA originally asked for corporate membership and three commissioner seats, Coady said JACH's invitation is a significant first step.

As well as ADA, the corporate members of the JCAH are: the American College of Physicians, the American College of Surgeons, the American Hospital Association and the American Medical Association.

Since 1969, the Canadian Dental Association has been in contact with the Canadian Council on Hospital Accreditation.

Currently CDA and CCHA perform a number of separate surveys at hospitals.

The sponsoring agencies and members of the Council are: the Canadian Medical Association, Canadian Hospital Association, Royal College of Physicians & Surgeons of Canada, Canadian Nurses Association and l'Association des Médecins de Langue Française du Canada.

The two groups are considering work on joint surveys at one hospital in July. Dr. Victor Chatwin, Accreditation director for CDA, said the move will save time for the hospital. The usual rule is hospitals must prepare for separate surveys at different times.

The move is still to be officially endorsed.

Manual available

The Canadian Dental Association Prepaid Dental Plan Manual was available to the dentists of Canada at the end of February.

Since that date, close to 1,500 Manuals have been requested by individual dentists and another 1,000 have been shipped in bulk to interested corporate members.

Copies of the Manual are available from the Canadian Dental Association, 1815 Alta Vista Drive, Ottawa, Ontario, K1G 3Y6.

Societies/ Sociétés

Association of Prosthodontists of Canada . . . Annual Meeting will be held May 24 and 25 at the Queen Elizabeth Hotel in Montreal. The theme of the first day of the meeting is "Biology and Prosthodontics." The second day will feature discussions on the "Cracked Tooth Syndrome" and "Precision Attachments."

For further information contact Dr. Brock Love, University of Manitoba, 780 Bannatyne Avenue, Winnipeg, Manitoba, R3E 0W3.

Académie des Généralistes Dentaires/Academy of General Dentistry . . .

AGD — Québec annonce un cours en Pathologie buccale — "Pathologie buccale et pratique quotidienne." Dimanche le 25 mai 1980, de 8:30 à 17. heures. Participation limitée à 50 personnes. Les conférenciers sont: le Dr Rénald Morency, professeur de pathologie buccale, Médecine Dentaire, Université Laval; pathologiste à l'Hôpital Enfant-Jésus (Québec); et post-gradué du Eastman Dental Hospital; et, le Dr Jean Yves Turcotte, professeur et directeur de chirurgie, Médecine Dentaire, Université Laval.

CDA Retirement Savings Plan

Unit values of the Canadian Dental Association's Retirement Savings Plan stood as follows on February 29, 1980:

<i>Common Stock Fund</i>	\$46.683
<i>Fixed Income Fund</i>	\$21.733
<i>Guaranteed Fund</i>	\$17.115
<i>Balanced Fund</i>	\$11.479

Total assets (market value) of the plan were \$34,081,929.

The previous month's figures, as

of January 31, 1980, stood as follows:

<i>Common Stock Fund</i>	\$46.805
<i>Fixed Income Fund</i>	\$22.090
<i>Guaranteed Fund</i>	\$16.954
<i>Balanced Fund</i>	\$11.847

Total assets (market value) of the plan were \$33,206,169.

For further information write to: Canadian Dental Service Plans Inc., P.O. Box 7500, Station A, Toronto, Ontario M5K 1A0.

La situation de la recherche - grave

Au Canada, les chercheurs dentaires sont peu encouragés au-delà de leur motivation personnelle, a remarqué le Dr John Stamm dans un récent commentaire sur la situation de la recherche dentaire au pays. Le Dr Stamm est professeur à la Faculté de dentisterie de l'Université McGill et président du Comité d'attribution de bourse de recherche du Programme national de recherche et de développement en matière de santé, de santé et Bien-Être social Canada.

Presque toute la recherche dentaire au Canada est faite à l'une des dix facultés de dentisterie. Il n'y a aucun institut national pour la recherche dentaire semblable à celui des États-Unis et ce, bien que le Conseil de la Recherche médicale (CRM) et le Ministère de la Santé et du Bien-Être disposent de sommes pour des projets particuliers. Les chercheurs peuvent parfois obtenir des subventions des universités et le Centre de Recherches pour le développement international (CRDI), à Ottawa, dispose de fonds limités pour la recherche scientifique générale. Le CRDI est une société publique établie par une loi du gouvernement en 1970 afin d'appuyer la recherche scientifique et technologique adaptée aux besoins particu-

liers des pays en voie de développement.

Il existe aussi un mode de subvention qui est à la fois archaïque et officieux. Il consiste "à voler Pierre pour favoriser Paul." Aussi, à l'Université de Toronto, où les restrictions budgétaires du gouvernement provincial menaçaient les travaux de recherches, le doyen de la Faculté de Dentisterie, le Dr Richard Ten Cate, doit jongler avec les fonds dont il dispose pour pouvoir financer l'enseignement et la recherche.

"Si je dispose d'un budget d'un million de dollars, par exemple, disait le Dr Ten Cate, "je suis forcé de prendre de cet argent pour financer la recherche, ce qui, inévitablement, se fait aux dépens de l'enseignement."

Les déclarations du Dr Ten Cate sur les difficultés d'apporter une aide financière aux chercheurs sont endossées par le Dr Stamm. Celui-ci croit que les administrateurs universitaires sont coincés: ils veulent que leurs institutions conduisent des recherches, mais ils ne peuvent pas se permettre d'engager du personnel supplémentaire et faire véritablement des projets à long terme qui soient administrativement et économiquement possibles.

Alors que le CRM accorde des subventions pour des travaux de recherches particuliers, il n'en donne aucune part comme salaire. De plus, les chercheurs ne sont pas ou sont peu dispensés de leurs tâches d'enseignement. Aussi, en entreprenant des recherches, les professeurs ajoutent-ils à leurs corvées. C'est là un fait qui amène plusieurs chercheurs éventuels à renoncer à cette carrière. Par ailleurs, lorsqu'un chercheur complète un travail spécifique, il ne voit pas ses chances de promotion augmenter. Enfin, l'obligation de publier pour survivre dans sa profession n'est pas aussi importante au Canada que dans d'autres pays.

Le Dr Ten Cate connaît des universitaires canadiens qui, à cause de leurs engagements professoraux, ne peuvent pas entreprendre des recherches comme ils aimeraient le faire et pour lesquelles ils sont qualifiés. Le danger de cette situation, tel que le Dr Ten Cate se le représente, c'est que l'université a pour première et principale responsabilité de promouvoir les connaissances, mais, sans des programmes de recherches suivis, la qualité de l'enseignement s'appauvrira à longue échéance.

Le Dr Tony Melcher, de l'Université de Toronto, est l'un des chercheurs les plus favorisés du pays. Bien que le CRM lui ait accordé une subvention pour cinq ans, le Dr Melcher s'inquiète sérieusement de la situation de la recherche dentaire.

"Le progrès de la science dentaire au Canada dépend," disait-il, "de la formation de bons savants dentaires, qu'ils soient des dentistes ou des gens intéressés à la dentisterie. Si nous ne prenons pas des mesures précises pour offrir des conditions de travail convenables et organiser la profession, nous courons au désastre en autant que la recherche dentaire est concernée et, en fin de compte, nous perdrons de bons universitaires dentaires."

Le Dr Melcher admet volontiers que la plus grande force d'un cher-

Régime d'épargne-retraite de l'ADC

Les valeurs respectives du Régime d'épargne-retraite de l'Association Dentaire Canadienne étaient les suivantes au 29 février 1980:

<i>Fonds d'actions ordinaires</i>	\$46.683
<i>Fonds à revenu fixe</i>	\$21.733
<i>Fonds garanti</i>	\$17.115
<i>Fonds de placement équilibré</i>	\$11.479

L'avoir total (valeur marchande) du régime s'élevait à \$34,081,929.

Au 31 janvier 1980, les chiffres du mois précédent étaient les suivants:

<i>Fonds d'actions ordinaires</i>	\$46.805
<i>Fonds à revenu fixe</i>	\$22.090
<i>Fonds garanti</i>	\$16.954
<i>Fonds de placement équilibré</i>	\$11.847

L'avoir total (valeur marchande) du régime s'élevait à \$33,206,169.

Pour obtenir tout renseignement supplémentaire, prière de s'adresser aux: Régimes des rentes et d'assurances subventionnés par l'ADC, P.O. Box 7500, Station A, Toronto, Ontario M5K 1A0.

cheur est son ambition d'acquérir des connaissances — et de poursuivre son travail avec le nouvel acquis. Il reconnaît que certaines écoles essaient de créer un climat propice à la recherche, mais il estime qu'il faut dix ans à un chercheur pour s'imposer et que plusieurs n'ont pas cette chance sur le plan académique.

"Nous avons besoin de sang nouveau," a-t-il dit. "Nous avons besoin de ceux qui sont prêts à dire: rien ne m'arrêtera."

L'an dernier, l'Association dentaire canadienne s'inquiétait du peu de ressources que le gouvernement fédéral accordait à la recherche dentaire (voir le numéro d'octobre 1979 du Journal de l'ADC). À ce moment, l'Association faisait état des besoins de chercheurs dentaires, d'une organisation pour ceux qui voudraient faire carrière dans ce domaine et de subventions adéquates. Des représentants de l'ADC ont pu obtenir que le Ministère national de la Santé et du Bien-Être accorderait une aide

accrue à la recherche dentaire au Canada.

Néanmoins, sans d'autres subventions, l'avenir paraît sombre. Le Bulletin de l'Association des Facultés de Dentisterie canadiennes du printemps 1980 faisait remarquer que, faute d'un appui financier, la recherche dentaire serait sérieusement compromise au pays.

Laissons le dernier mot au Dr Ten Cate.

"Dans les années '60, les gouvernements et les universités reconnaissaient le besoin de former des chercheurs au Canada. Les universités avaient des dollars et, au pays, il semblait y avoir un avenir pour la recherche. Maintenant, à moins d'être prudent, les choses redeviendront ce qu'elles étaient avant les années '60 et il ne sera plus possible de faire des projets à long terme. Les détenteurs de Ph.D. et de D.D.S. ne voudront tout simplement plus faire de la recherche."

Assemblée d'endodontie

La 16^{ième} assemblée annuelle de l'Académie canadienne d'endodontie est prévue pour les 12 et 13 juillet 1980, au Château Halifax, à Halifax, en Nouvelle-Écosse.

Le Dr Dennis Smith, de l'Université de Toronto, et le Dr Cyril Gaum, de Boston, Massachusetts, seront les conférenciers invités.

Le Dr Smith parlera des matériaux nécessaires en endodontie et le Dr Gaum abordera les difficultés que posent les diagnostics.

On a aussi prévu un déjeuner causerie et un programme à l'intention des dames.

Les intéressés peuvent communiquer avec le Dr Tom Larder au 5991, chemin Spring Garden, Halifax, Nouvelle-Écosse, B3H 1Y6.



Le Dr Clyde Covit, président de l'ADC, remet le certificat d'agrément à M. William Busat, directeur général de l'Hôpital Ste-Marie, Montréal, et au Dr Marcel Hébert, chef du Département de la médecine dentaire.

Assemblée du Conseil

L'association dentaire canadienne continuera de se développer selon les principes que nous avons arrêtés pour notre profession, de pratiquer des politiques... et d'agir comme porte-parole de l'art dentaire au Canada afin d'implanter plus solidement le professionnalisme auquel nous sommes parvenus en travaillant très durement." Ainsi débutait l'allocution du président de l'ADC, le Dr Clyde Covit, lors de l'assemblée interimaire du Conseil d'administration.

Cette assemblée était présidée par le Dr Nick Mancini et elle eut lieu les 7 et 8 mars derniers, à Ottawa. En voici les principaux points.

LA TAXATION DES PETITES ENTREPRISES — BILL C-17

Le Dr Robert Hicks, président du Comité de taxation, a fait part au Conseil du nouvel amendement touchant le dégrèvement fiscal des petites entreprises. Le taux d'imposition de 50 pour cent a été réduit à 33 1/3 pour cent pour les entreprises et les sociétés de gestion qui sont associées aux dentistes, aux médecins, aux avocats, aux comptables, aux vétérinaires et aux chiropraticiens. Cet amendement avait été proposé par le gouvernement conservateur avant la récente passation des pouvoirs à Ottawa. Il a été approuvé à la Chambre des Communes et a reçu la sanction royale.

ÉTATS FINANCIERS

Les états financiers de l'Association dentaire canadienne pour l'année se terminant le 31 décembre 1979 seront publiés dans le prochain numéro du Journal.

FRAIS D'ADHESION

Le Conseil d'administration a approuvé une recommandation du Con-

seil exécutif à l'effet d'augmenter les frais d'adhésion à l'ADC de \$75 pour les membres actifs et affiliés.

Le président élu, le Dr Gil Utas, a fait remarquer que cette augmentation des frais de \$125 à \$200 est nécessaire pour maintenir la qualité des services offerts aux membres et pour développer le programme des activités de l'Association dentaire canadienne.

Récemment, le président a envoyé une lettre aux membres pour leur faire part des détails à ce sujet.

CAMPAGNE DE RECRUTEMENT 1980

Le 3 mars, a-t-on annoncé, on comptait 4,324 dentistes du Québec et de l'Ontario qui s'étaient joints à l'Association dentaire canadienne. Un mois avant la fin de la campagne 1980, il y a déjà une augmentation par rapport au nombre total d'adhérents en 1979.

CAASI

On a approuvé le formulaire de réclamation pour les accidents dentaires. On a fait remarquer que la CAASI a accepté ce formulaire après que ses représentants se fussent entretenus avec les porte-parole de l'ADC, le Dr Clyde Covit et le Dr Robert Sexton, président du Conseil des Soins de santé.

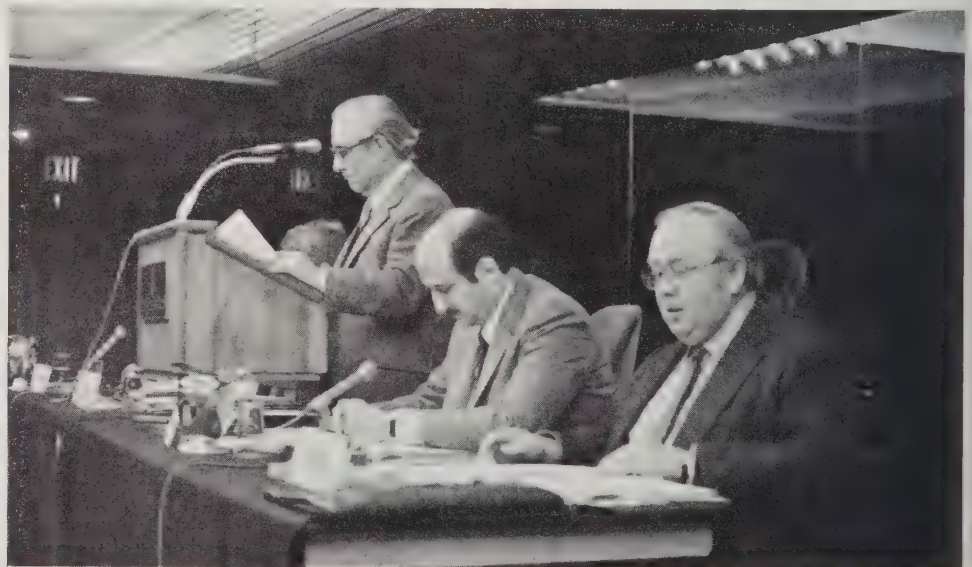
CDSPI

Le nouveau Conseil des CDSPI a tenu sa première assemblée le 11 janvier dernier. Dans un communiqué, on a fait part aux membres des renseignements complets sur la récente réorganisation du Conseil. Le nouveau directeur est M. Cyril Gallant, CLU, qui a plus de 30 années d'expérience dans l'assurance-groupe et l'administration. Le Dr Roy Rasmussen est le nouveau directeur du Conseil. Le Comité de gestion se compose du Dr John Durran, président et directeur exécutif des CDSPI, du Dr Rod Moran, secrétaire, et du Dr Melvin Charendoff.

COMMISSION D'ENQUÊTE SUR LES SERVICES DE SANTÉ

Le Dr Clyde Covit a expliqué brièvement quelle a été la participation de l'Association dentaire canadienne à la Commission Hall sur les soins de santé offerts au Canadiens (voir l'insertion au début du Journal.) L'ADC a présenté un mémoire pour lequel le Dr John Stamm, de l'Université McGill, a agi comme conseiller et dans lequel on fait état des dépenses en soins de santé dentaires, des régimes d'assurance privé et publiquement subventionnés par une tierce partie, des programmes

suite à la page 246



Le Dr Nick Mancini, à gauche, et le Dr Clyde Covit, président de l'ADC ainsi que le Dr Rod Moran, président sortant, à droite, à l'assemblée interimaire du Conseil d'administration.



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Conseil d'administration

Assemblée du Conseil

suite de la page 244

dans les écoles, des gardes-malades dentaires et de l'importance d'améliorer l'accès aux soins dentaires. Le Dr Covit a déclaré que le mémoire aborde le problème du mécontentement grandissant au sein de la profession et que ce problème pourrait éventuellement nuire à la qualité des soins dentaires.

On peut se procurer des copies du mémoire de l'ADC au complet, y compris les renseignements statistiques, en s'adressant à l'Association. Le nombre est limité.

CONGRÈS DE L'ADC

Le Conseil d'administration a consenti à ce que les frais d'inscription au Congrès de l'Association dentaire canadienne soient plus élevés pour les dentistes canadiens qui ne sont pas membres de l'ADC. Les dentistes étrangers qui sont membres actuels de leur association respective payeront les mêmes frais que les membres de l'ADC.

SERVICES DE RENSEIGNEMENTS

Le Dr Michel Carvonis de Hull, Québec, succédera au Dr Don Scramstad à la présidence du Mois national de la santé dentaire. Le Dr Scramstad s'est occupé du Comité du MNSD à titre de président au cours des cinq dernières années et il a bien servi l'ADC à ce poste.

On a proposé cinq nouveaux prospectus pour la prochaine année et on est en train d'en préparer dix autres.

MATÉRIAUX ET APPAREILS DENTAIRES

Ce Conseil, a-t-on rapporté, s'est occupé, en collaboration avec le

comité technique de dentisterie de l'Association canadienne de normalisation (ACNOR) d'établir cinq normes canadiennes pour les produits dentaires.

À la demande de la Direction générale de la Protection de la santé, du Ministère de la Santé et du Bien-Être social du Canada, le Conseil a révisé une lettre de mise en garde contre les problèmes que peut causer l'usage des amalgames en phase de dispersion. Cette lettre sera postée directement à tous les dentistes par la Direction générale de la Protection de la santé.

Afin de tenter de déterminer jusqu'à quel point la contamination par le mercure cause un problème dans les cabinets dentaires, le Conseil sur les matériaux et appareils dentaires fait le nécessaire pour se procurer un équipement de contrôle du mercure afin de mener une enquête dans les cabinets dentaires à travers le Canada. À l'aide d'un équipement et assisté d'un technicien du Ministère de la Santé et du Bien-Être social du Canada, les membres du Conseil dirigeront des enquêtes dans leurs propres régions.

FCED

Parce que les postes d'enseignement sont moins nombreux, le Fonds canadien pour l'enseignement dentaire (FCED) est à revoir ses critères pour l'attribution des bourses d'enseignement. À cause du manque de postes, il est difficile pour celui qui demande une bourse de satisfaire à l'exigence selon laquelle il enseignera au moins deux jours ou, de préférence, quatre jours par semaine.

Les membres de la profession dentaire ont donné plus de \$70,000 au FCED en 1979. Les dons provenant des commerces et des industries atteignent presque \$82,000 et les dons 'in memoriam' s'élèvent à plus de \$9,000.

En 1979, le FCED a alloué plus de \$120,000 à 16 programmes différents en dentisterie avancée.

STATUTS ET RÈGLEMENTS

Le Conseil d'administration a approuvé un amendement aux lettres patentes et aux statuts de l'ADC afin de transmettre les fonctions du Conseil d'assurances et de placements aux Régimes des rentes et d'assurances subventionnés par l'ADC (CDSPI). Le Conseil et les CDSPI doivent revoir l'entente entre l'ADC et les CDSPI chaque année.

Pour l'adhésion à l'ADC, le Conseil a accepté qu'un spécialiste diplômé dans la province de Québec puisse devenir un membre actif de l'Association dentaire canadienne après avoir acquitté les frais d'adhésion annuels.

FDI

Le Dr Covit a été nommé trésorier national de l'ADC pour la FDI cette année. Lui et le Dr Moran seront les délégués de l'ADC à l'assemblée de la FDI à Hambourg, en Allemagne.

On est convenu que les frais d'adhésion à la FDI comme membre de soutien seront de \$30 pour l'année 1980 (\$55 pour ceux qui désirent aussi recevoir le Journal de la FDI). Ces frais sont payables à l'ADC.

SERVICES HOSPITALIERS

Des représentants du Conseil des Services hospitaliers de l'Association dentaire canadienne participeront à un projet-pilote afin d'établir, conjointement avec le Conseil canadien d'Agrément des hôpitaux, des règles de procédure pour l'agrément. La première enquête conjointe se fera ce printemps au Centre de santé pour enfants Dr Charles A. Janeway à Saint-Jean, Terre-Neuve. Le Conseil d'administration a approuvé les *Normes et directives pour les services dentaires dans les hôpitaux*. On peut s'en procurer des copies à l'ADC.

ETHIQUE

Le Conseil d'Ethique a présenté une déclaration sur "la dentisterie

de commerce” au Conseil d’administration à titre de renseignement. Fondamentalement, le Conseil d’Ethique “croit que, même si le fait d’avoir une pratique dentaire dans un établissement commercial n’est pas en soi contraire à l’éthique, il serait prudent pour tout dentiste qui envisage de pratiquer dans un établissement commercial, de considérer attentivement les implications éthiques et légales de pareils arrangements.” Le Conseil craint les possibles violations au code éthique lorsque des liens contractuels serrés impliquant une pratique dentaire sont noués entre un dentiste et un organisme commercial. Le Conseil d’administration a aussi discuté le travail que le Conseil d’Ethique a entrepris sur le Code éthique de l’ADC, lequel sera présenté sous sa forme définitive à l’assemblée du Conseil d’administration en septembre.

SOINS DE SANTÉ

L'Association dentaire canadienne a alloué environ \$2,000 au Sous-Comité de dentisterie pour l'assemblée des handicapés afin de trouver des moyens plus efficaces de donner des soins dentaires aux handicapés. Une autre assemblée est prévue plus tard cette année.

CENTRE DE RESSOURCES

L'Association dentaire canadienne compte pouvoir mieux servir les dentistes du Canada en créant un centre de ressources important au siège national de l'ADC.

L'Association recueillera et classifiera des renseignements sur des sujets variés comme la Révision par un pair et l'Éducation permanente, afin de fournir des moyens de discussion aux organismes qui octroient les permis, aux associations provinciales et aux autres partis intéressés. D'autres matériaux susceptibles d'intéresser les membres en général pourront être intégrés au système à mesure qu'il se développera au cours des prochains mois.

L'assurance- chômage et l'ACHD

Plus de la moitié des hygiénistes dentaires canadiens ne sont pas admissibles aux prestations de chômage à cause des changements apportés dans la législation de l'assurance-chômage. C'est ce qu'a déclaré un porte-parole officiel de l'Association canadienne des hygiénistes dentaires.

Elaine Good, chef de la Division de Main-d'oeuvre et Réalisation pour l'ACHD, a dit que l'amendement apporté en janvier 1979 à la loi sur l'assurance-chômage, article 54, est discriminatoire pour les hygiénistes qui travaillent à temps complet, mais dans différents bureaux.

D'après cet amendement, "tout employé, s'il est rémunéré en tout ou en partie selon un taux horaire ou selon un salaire fixe, doit être au service d'un même employeur au moins vingt heures par semaine pour être assurable [paragraphe 54 (1) (a)]."

Ordinairement, un dentiste ne peut employer un hygiéniste à temps complet. Aussi, de dire E. Good, plusieurs hygiénistes doivent-ils travailler pour différents dentistes s'ils veulent remplir leur semaine.

Elle ignore combien il y a d'hygiénistes au Canada que cet amendement affecte, mais dans sa seule région — celle de l'Association des hygiénistes dentaires de Waterloo-Wellington en Ontario — elle estime qu'il y en a environ 50 pour cent.

Bien que l'assurance-chômage ne soit pas une priorité pour tous les hygiénistes, les prestations prévues en cas de maladie ou de grossesse sont importantes.

Environ 75 pour cent des hygiénistes dentaires canadiens ont moins de 30 ans et, de ce nombre, plus de 95 pour cent sont des femmes.

Les lois sur l'assurance-chômage

prévoient des indemnités pour les femmes enceintes avant et après la naissance de l'enfant. Dans les cas de maladie, l'employeur indemnise l'employé pendant un certain nombre de semaines convenu. Ensuite, c'est l'assurance-chômage qui continue à payer les prestations.

L'hiver dernier, l'ACHD a demandé à ses membres d'écrire à leur député et au ministre fédéral de l'Immigration pour faire connaître leur mécontentement. Malheureusement, de dire E. Good, il est pratiquement impossible de juger de l'effet de cette mesure, mais jusqu'à maintenant "les résultats n'ont pas été très encourageants."

Présentement, le gouvernement est à reviser la législation sur l'assurance-chômage, a-t-elle poursuivi. Cependant, tant que rien ne sera changé pour le mieux, les hygiénistes devront s'assurer auprès de compagnies privées. Mais ce ne peut être qu'une solution temporaire, a-t-elle ajouté. Les lois sur l'assurance-chômage exigent que l'employeur verse 1.4 fois le montant payé par l'employé, alors qu'avec une compagnie d'assurance, l'assuré doit payer toute la prime lui-même.

En janvier 1980, l'Association canadienne des hygiénistes dentaires, après avoir soumis tous ses membres à un vote par voie du courrier, a émis une déclaration officielle pour exprimer ses vues au sujet de l'amendement apporté à la loi sur l'assurance-chômage, article 54.

Il s'agit maintenant de porter cette déclaration au Ministre de la Main-d'oeuvre et de l'Immigration, a dit Elaine Good.

L'Université Laval . . .

Le comité de l'extension de l'enseignement de l'école de médecine dentaire de l'Université Laval annonce les nominations, à ce comité, des docteurs Marcel Proulx (coordonnateur), Hubert Gaucher et Christian Bernard.

Éducation permanente

Il est devenu nécessaire pour l'Association dentaire canadienne de définir son rôle en éducation permanente et, à cette fin, elle a tenu une conférence sur l'éducation permanente le mois dernier, à Ottawa.

Près de 40 intéressés venus du Canada entier ont participé à cette conférence d'une journée. Furent présents les présidents provinciaux de l'Éducation permanente et des représentants des membres affiliés, des registraires provinciaux ainsi que des représentants des facultés, des groupes spéciaux et du BNED. La conférence a été divisée en trois séances de travail. On y a discuté des problèmes actuels touchant la coordination, le développement et l'administration en éducation permanente au pays et des rôles que l'ADC pourrait y jouer à l'avenir.

Voici les six recommandations qu'on a faites:

- L'ADC devrait établir des directives nationales pour les institutions qui offrent des cours d'éducation permanente.
- L'ADC devrait établir un centre où l'on obtiendrait du matériel pour les cours, du matériel audiovisuel, des renseignements sur les conférenciers, etc.
- L'ADC devrait intervenir auprès des gouvernements afin d'obtenir une aide financière pour l'éducation permanente sous forme d'exemption d'impôts ou de subventions.
- On devrait encourager le Conseil d'Éducation à inclure des programmes d'éducation permanente dans la révision des facultés dentaires.
- L'ADC devrait continuer à prêter son aide dans la coordination des programmes d'éducation permanente.

— Le Comité d'Éducation permanente ad hoc devrait devenir une commission permanente du Conseil d'Éducation.

Le coordinateur de la conférence, M. Robert Gobert, membre du service de l'Éducation permanente pour les sciences de la santé, à l'Université de la Colombie-Britannique, a été chargé de préparer un rapport complet sur les délibérations.

L'enquête sur les services de santé

Le mois dernier, l'Association dentaire canadienne présentait son *Opinique sur la santé dentaire des canadiens* à la Commission d'enquête sur les services de santé. Au nom de l'Association, le Dr Clyde Covit, président de l'ADC, s'est adressé au juge Emmet Hall, président de la Commission d'enquête.

Les autres représentants de l'Association dentaire canadienne présents à l'audience étaient le Dr Gil Utas, président élu, le Dr Rod Moran, président sortant, et M. Hubert Drouin, directeur général. Le Dr John Stamm, de l'Université McGill, agissait comme conseiller de l'ADC à cette occasion.



Selon le Dr Covit, la santé dentaire des Canadiens s'est grandement améliorée au cours des 15 dernières années à cause de l'usage répandu de la fluoration, des programmes de santé publics encourageant la prévention et du meilleur accès aux soins dentaires.

De plus, l'ADC a exhorté les gouvernements à encourager l'entreprise privée pour qu'elle continue à établir des régimes d'indemnisation par une tierce partie à l'intention des familles, afin d'améliorer davantage l'accès aux soins dentaires.

L'ADC a fait 11 recommandations et, entre autres, elle demande que le public canadien soit mieux renseigné sur les dépenses en soins de santé.

"Il est faux et injuste de blâmer les différents régimes d'assurance médicaux et dentaires," a déclaré le Dr Covit, "car ces régimes ne sont pas la cause principale de l'augmentation des dépenses en soins de santé. Le coût des soins de santé personnels par habitant n'a pas augmenté aussi rapidement que l'index des prix au consommateur . . . dernièrement, (ce coût) semble décroître par rapport au PNB par habitant."

On doit faire des efforts pour convaincre les Canadiens qu'ils peuvent prévenir la plupart des maladies dentaires. Des programmes éducatifs devraient émaner d'un système qui stimule les gens et les encourage à se montrer personnellement responsables de leur santé dentaire, a souligné le Dr Covit. Il a ajouté que les provinces dont moins de 20 pour cent de la population est protégée par la fluoration, devraient faire l'objet d'une attention toute spéciale.

Dans son mémoire, l'ADC demande instamment qu'on entreprenne une importante étude sur les politiques publiques actuelles touchant la main-d'oeuvre dentaire. L'ADC désire également qu'on appuie davantage un système de soins dentaires mieux intégré et plus approprié à la famille afin de mieux répondre à l'urgent besoin de programmes de santé dentaire préventifs au Canada.

On étudie les entrevues

Le Canada a entrepris une étude nationale dont le but est d'évaluer l'entrevue personnelle qui se donne lors de la sélection des étudiants en médecine dentaire, soit pour corroborer l'utilité de cette entrevue, soit pour l'éliminer.

Cette étude est dirigée par le Comité chargé du test d'aptitudes aux études dentaires canadien et a reçu l'appui de l'Association dentaire de l'Ontario. Pendant les onze années qu'elle durera, on essaiera d'établir une méthode d'entrevue type, valable pour toutes les facultés dentaires du pays.

Selon le Dr Walter Teteruck, président du Comité, plusieurs écoles dentaires à travers le monde, dont deux au Canada, font passer une entrevue aux étudiants avant l'admission, mais la valeur de cette méthode n'a jamais été étudiée à l'échelle nationale.

Actuellement, huit facultés dentaires du Canada utilisent trois méthodes traditionnelles de sélection, à savoir les résultats scolaires des étudiants non diplômés, le test d'aptitudes aux études dentaires et le test de modelage.

Les deux autres facultés dentaires canadiennes, soit celles de Toronto et de l'Alberta, ont ajouté l'entrevue aux méthodes traditionnelles, la première en 1975, la seconde en 1979.

Le Dr Teteruck a fait remarquer que les méthodes traditionnelles évaluent les aptitudes intellectuelles et manuelles des candidats, mais ne révèlent rien de leurs autres facultés ni de leur personnalité.

L'un des quatre examens faisant partie du test d'aptitudes est un test de personnalité. Il comprend 16 questions destinées à faire connaître le candidat et les traits caractéristiques de sa personnalité.

Toutefois, l'ADC ne communique pas aux universités les résultats de ce test de personnalité pour les formalités d'admission. Ce test n'est pas totalement reconnu, a précisé le Dr Teteruck, et le Comité en étudie les données pour tenter de mettre au point un test de personnalité.

De fait, a-t-il ajouté, ce test est une façon impersonnelle de juger le caractère d'un candidat. La plupart du temps, les étudiants se présentent sous un jour meilleur lorsqu'ils s'expriment verbalement.

Au cours des dernières années, les écoles dentaires et des membres de la profession ont exprimé le besoin d'établir un moyen de juger la personnalité des candidats.

Selon les recherches faites par les Américains dans ce domaine, un rendement académique supérieur n'implique pas nécessairement que le candidat soit compétent sur le plan professionnel. Ils ont découvert que les étudiants dont le rendement est supérieur à la moyenne étaient, plus que les autres, portés à choisir

Au cours des dernières années, les écoles dentaires et des membres de la profession ont exprimé le besoin d'établir un moyen de juger la personnalité des candidats . . .

une spécialité dans laquelle l'intervention du patient est limitée. En outre, ces mêmes individus se montraient, par rapport à leurs confrères moins brillants, plus étroits d'esprit dans les matières mêmes qui les intéressaient, s'adaptaient moins facilement qu'eux aux changements, étaient moins ouverts et moins à l'aise en communiquant avec leurs égaux.

Plusieurs facultés dentaires reconnaissent qu'il est difficile de tenir compte de pareils impondérables. Aussi ont-elles décidé d'en faire abstraction ou de leur accorder peu d'importance.

Selon le Dr Teteruck, l'étude entreprise à pour but d'offrir aux facultés dentaires qui veulent convoquer leurs candidats à une entrevue une méthode normalisée dont l'efficacité a été prouvée.

Il y a huit différentes caractéristiques que les écoles dentaires jugent importantes, à savoir la motivation, l'estime de soi, l'aptitude à communiquer avec autrui, la maturité, la faculté d'adaptation, le sens de la responsabilité, l'esprit de principe et le comportement.

La présente étude, de dire le Dr Teteruck, essaiera non seulement d'inclure ces huit caractéristiques dans l'entrevue, mais aussi de déterminer quelle sera la valeur de l'entrevue à partir de ces huit caractéristiques.

L'étude a été entreprise en décembre 1979 et se poursuivra jusqu'en 1990.

La faculté dentaire de l'Université de la Colombie Britannique est la première à y participer. Les étudiants qui désirent s'inscrire à cette école cet automne, ont dû passer un examen en février 1980. Ils ont été soumis aux épreuves traditionnelles et convoqués à une entrevue personnelle.

Après chaque entrevue, l'interrogateur a noté un bulletin selon des critères déterminés à l'avance.

D'avril à juin 1980, le Comité doit passer en revue les données de cette première étude. On compte régler les problèmes à mesure qu'ils surgiront.

La deuxième étape de cette étude sera entreprise dès juillet 1980. On fera appel à la participation de toutes les facultés dentaires canadiennes en leur demandant d'inclure l'entrevue personnelle dans les formalités d'admission. Jusqu'à maintenant, cinq facultés s'intéressent au projet.

Cette deuxième étape prendra dix ans, puisqu'il s'agira de suivre les étudiants à partir du moment où ils seront admis à une faculté dentaire jusqu'au moment où ils exerceront leur profession.

Book Reviews

Color Atlas of Clinical Conditions in Pedodontics

R. Rapp and G.B. Winter

*Year Book Medical Publishers,
Chicago, 1979, 144 pages*

The "Color Atlas of Clinical Conditions in Pedodontics" offers dentists and dental students a reference book to help in the recognition and diagnosis of the clinical conditions in Pedodontics.

The 142 page Atlas contains over 450 color photographs, radiographs and some histologic sections of many oral and related diseases and anomalies of children.

The Atlas is divided into eight sections. The initial section deals with the cranium and face and provides excellent examples of various cranio-facial abnormalities. Some of these conditions are commonly encountered in a general dental practice which includes children, or in a specialized practice limited to dentistry for children. Other conditions presented in the Atlas are rare, but important for practitioners and students interested in pedodontic related dentistry.

The second section is devoted to various abnormalities of the teeth. It has subsections dealing with problems of number, shape, size, structure, color, eruption and exfoliation, trauma, caries and pulp. It is an extensive and well organized section dealing with the many abnormalities both of a common and rare nature.

The third section presents many periodontal and gingival conditions found in children. The photographs are specific and can be helpful as a reference source in establishing a proper diagnosis.

The fourth section has illustrations on the oral mucosa, lips, alveolar mucosa, cheeks and floor of the mouth, and the fifth and

sixth sections are illustrations of the palate and tongue.

The last two sections deal with the jaws and the limbs. The last section on the limbs represents extra-oral manifestations, conditions presented in previous sections of the Atlas.

Generally, the quality of reproductions is good, but in some instances reproductions of the radiographs are not as clear and distinct as might be expected.

The authors have stated that this Atlas "is not a textbook and therefore is not meant to be thoroughly comprehensive." How-

ever, it is an excellent compilation of many abnormal conditions and variations.

The Atlas, as with other books in the series produced by the same publisher, is a useful adjunct for those interested in the pediatric dental patient. It should serve as a necessary reference to aid in the diagnosis of abnormal clinical conditions.

"Color Atlas of Clinical Conditions in Pedodontics" was reviewed by Dr. F. Pulver, Toronto, Ontario.

Future Review Listings

The Journal has planned further book reviews on topics important to Canada's dental profession for future issues. As with past reviews, your dental colleagues have accepted the challenge of reviewing the books. This helps to ensure the profession receives worthwhile and useful information.

The energy and time required to thoroughly review these books is considerable. In many cases the dental reviewer is given the book months before the publication date.

A rundown of the books scheduled for review in the Journal shows a variety of subjects interesting to the dental profession, including: *The Diagnosis and Treatment of Periodontal Disease in General Dental Practice*, by Pritchard; *Atlas radiographique d'anatomie dentaire*, by Kasle; *Management of Dental Behavior in Children*, by Ripa and Barenie;

Dental Sedation and Anesthesia; Basic and Applied Dental Biochemistry, by Livingstone; *Temporo-Mandibular Joint Function and Dysfunction*, by Zarb and Carlsson; *Periodontology and Periodontics*, by Ramfjord and Ash; and *Essentials of Complete Denture Prosthodontics*, by Winkler.

Comments from Journal readers indicate the Book Review Department is something dentists enjoy and can easily relate to their profession.

The Journal looks forward to continued reviews on publications important to the dental field. All authors and publishing companies are encouraged to submit books they consider appropriate for Canada's dental profession.

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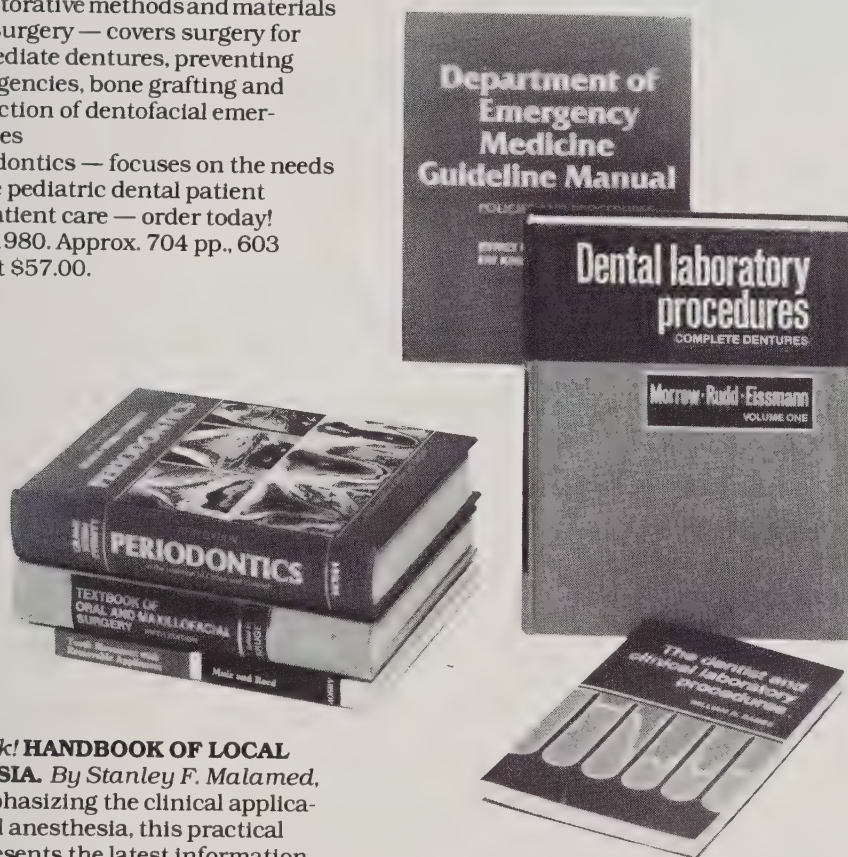
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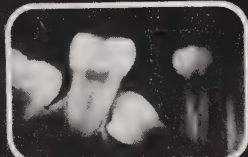
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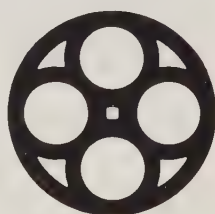
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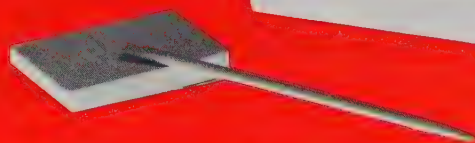
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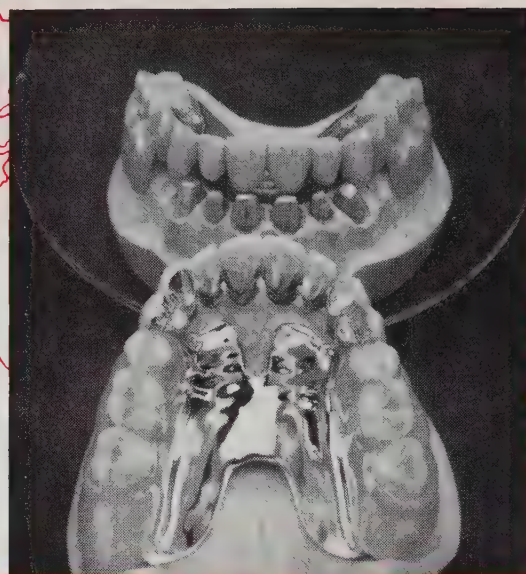
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Other studies have dealt with methods of preventing pit and fissure caries by filling, altering or sealing. This 30-month study, as part of a larger clinical sealant study records the progress of occlusal caries in non-sealed sticky fissures as compared to sealed fissure controls.

Sticky fissure management

30-month report

G.B. Gibson, DDS
A.S. Richardson, DDS, MSc
Vancouver, British Columbia

ABSTRACT

Thirty months after application of a fissure sealant, clinical and radiographic examinations were conducted on 79 test and control molars (111 surfaces) which were originally diagnosed as having sticky occlusal fissures. This paper reports that in a significant number of cases the sticky fissure requires no treatment and that when treatment is elected, the use of a sealant is a highly effective modality for preventing dental caries as well as for inhibiting the progress of caries sealed in the fissure.

SOMMAIRE

Trente mois après l'application d'un obturateur de sillons, des examens cliniques et radiographiques ont été effectués sur 79 molaires (111 surfaces) testées et choisies comme témoins qui, selon le diagnostic original, présentaient des sillons occlusaux collants. Cet article fait état d'un nombre important de cas dont les sillons collants ne nécessitent aucun traitement. Cependant, lorsqu'on choisit de traiter ceux-ci, l'usage d'un obturateur est un moyen grandement efficace pour prévenir la carie aussi bien que pour arrêter le progrès des caries scellées dans le sillon.

Historically, the dental profession has been concerned with the two opposing questions of when and when not to prepare and restore pits and fissures in enamel of posterior teeth. Closely related, has been concern over the development of caries in pits and fissures. Various solutions have been proposed over the years.

The classic approach to the fissure problem, as proposed by G.V. Black in the late 19th century, was extension for prevention of recurrence of decay, an approach still widely accepted and practised by dentists.¹ Hyatt's^{2,3} method for prophylactic odontotomy and Bodecker's^{4,5} method for eradicating enamel fissures, represent other mechanical approaches to this problem.

Chemical methods of sealing pits and fissures, to prevent development of caries, have also been investigated. The use of chemical precipitates^{6,7} was proposed. However, with the exception of Black's procedure, none of the preceding methods has been widely accepted in dentistry. The currently accepted chemical preventive agent is the adhesive bis-GMA resin applied to acid-etched occlusal surfaces. This material has been shown in a five year study⁸ to result in a 39 per cent prevention of occlusal caries in all sealed sites and a retention rate of 42 per cent. In sites with other than totally missing sealant, a 92 per cent prevention

of dental caries was achieved.

Other studies have dealt with methods of preventing pit and fissure caries by filling, altering or sealing. This 30-month study, as part of a larger clinical sealant study,⁹ records the progress of occlusal caries in non-sealed sticky fissures as compared to sealed sticky fissure controls.

METHOD

As part of a larger clinical sealant study which commenced in May 1975,⁹ sticky occlusals were included in test and control teeth. Right to left pairs of sound or sticky first permanent molars in grade two children were included in the sealant study. The surfaces were deemed sticky when there was moderate resistance to the removal of new 'Cleavdent #5' explorers from occlusal pits or fissures and when there were no visible signs of caries. All examinations were conducted by the same dentist in school health rooms using mouth mirror, explorer and standardized portable lighting. No radiographs were taken at the initial examination. By random selection, one of each pair of molars received a self-polymerizing red colored sealant*, the opposite molar serving as a control. The steps in sealant application were: rubber cup prophylaxis with a non-oil based acid-etch paste*, wash and dry, etch with 37 per cent orthophosphoric acid for 90 seconds, wash, dry, mix and apply sealant with a curing time of 120 seconds. The rubber dam was not used during sealant application.

Thirty months after sealant application, clinical and radiographic examinations were conducted on 79 test and control molars with originally diagnosed sticky surfaces. The original examiner conducted the clinical examinations and read the bite-wing radiographs which were taken at a school dental clinic. The teeth were diagnosed at 30 months as sound, sticky, carious or filled.

RESULTS

Previous studies^{8,10,11} demonstrated a difference in the retention rate of sealants in the central and distal fossae of maxillary molars. The occlusal surfaces of the maxillary molars are reported as having two surfaces — central and distal. **Table 1** and **Figure 1** show the change in status of 111 surfaces over the 30-month period — 58 test surfaces and 53 control surfaces. Of the sealed sticky occlusal surfaces, 81 per cent became sound or remained sticky, while 19 per cent became carious or were filled. For the control surfaces, 22.6 per cent remained sticky or became sound, while 77.4 per cent became carious or were filled. Six of the restored surfaces also involved the mesial surface in three test and in three control teeth. Four sealed surfaces were diagnosed sound after clinical examination but changed to carious after radiographic examination. The diagnosis of

three control surfaces changed from sticky to carious after radiographic evaluation.

DISCUSSION

Differential diagnosis of sound, sticky and carious pits and fissures is often difficult. Pits or fissures which do not catch the explorer tip may be carious, yet non-carious fissures can also catch probes. Gillings and Buonocore¹² show that a carious lesion can exist beneath an occlusal fissure, clinically judged non-carious. Further complicating the diagnosis, Parfitt¹³ shows that incipient caries may precede clinical detection by 12 to 18 months, while Miller and Hobson¹⁴ show that histological examination, reveals 70 per cent of teeth with sticky fissures had caries on the sides.

The anatomy of pits and fissures and their extreme morphological complexity, has been studied by Galil and Gwinnett,¹⁵ and Gillings and Buonocore.¹² In serial sections of teeth and in three dimensional vinyl resin replication techniques, these researchers demonstrated many seemingly intact fissures are open and that infolding of enamel around the fissure frequently leaves the dentine partially covered by the enamel. They have also shown that pits and fissures may exist separately and pits may arise multi-directionally from fissures deep within the tooth crowns.

This would seem to indicate most, if not all pits and fissures should be treated, in some manner, to occlude these areas to intercept or prevent caries. However, Galil and Gwinnett¹⁶ have shown that in some instances the contents of pits and fissures may undergo a progressive mineralization. This phenomenon would suggest why 22.6 per cent of the control surfaces in this study became sound (eight surfaces) or remained sticky (four surfaces), and would also suggest that not all sticky fissures require interception to prevent the progress or development of caries.

The problems of diagnosis and appropriate treatment of the sticky fissure become evident to the practising dentist. Altering or removing the fissure, as proposed by Hyatt and Bodecker, could be an effective and conservative

TABLE 1

Status of 111 sticky occlusal surfaces in first permanent molars after 30 months

		Sound	No Change	Carious	Filled	Totals
Control	Maxillary central	3	1	2	8	14
	Maxillary distal	3	2	1	8	14
	Mandibular	2	1	6	16	25
	Totals	8	4	9	32	53
Sealed	Maxillary central	16	1	1	0	18
	Maxillary distal	14	1	2	1	18
	Mandibular	15	0	3	4	22
	Totals	45	2	6	5	58

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caries preventive method if the fissure were a shallow two-dimensional 'V' shape. It is questionable for a dentist determined to conserve tooth structure in cavity preparations, particularly in multi-fissured occlusal surfaces, to restore the entire occlusal extension of the fissure according to Black's principles. In sealing the fissure, dentists are concerned with the possibility of sealing-in incipient caries which may progress undetected for several months or years, particularly if the initial examination reveals a sticky fissure. Conversely, to many dentists, leaving the sticky fissure is procrastination.

In spite of problems of diagnosis and treatment of pits and fissures, a treatment plan must be established. They can be restored, as pits or full occlusal restorations; left as is, with or without fluoride; or sealed. A restoration solves the immediate problem, but also introduces the possibility of marginal breakdown with more leakage than experienced with the original sticky fissure. Leakage often occurs at margins of restorations not adequately extended into all non-coalesced fissures. Also, in a short period, many restorations will be replaced by two-surface restorations due to interproximal caries, particularly in non-fluoridated areas.¹⁷

The study results indicate sealants placed on sticky occlusal surfaces in first permanent molars prevents active progression of caries and reduces the number of carious or filled surfaces after 30 months. Only six of the 58 sealed surfaces became carious, three of which had lost the sealant. Five were restored, three of which were MO's. Of the 53 control surfaces 32 became carious or were filled.

The 30-month radiographic and clinical findings indi-

cating inhibition of the carious process in sticky fissures are consistent with the findings of Handelman et al.¹⁸ They found a 2,000-fold decrease in the number of cultivated micro-organisms beneath a sealed tooth occurred after two years and no progression of the carious lesion appeared. In a recent study by Going et al.¹⁹ clinically detected caries, under a sealant for five years, yielded either negative bacterial cultures or cultures of low bacterial density. Powell et al.²⁰ suggest while a high percentage of occlusal sealants *in vitro* exhibit leakage of Ca isotope, the same penetration may not be possible for larger molecules, bacteria and plaque. Richardson²¹ reports a case in which dentinal caries under a sealant remained the same size radiographically 13 months after placement of the sealant.

Although dentinal caries was found radiographically beneath four of the sealed teeth (and in three of the non-sealed) in this study, it is assumed the sealed lesions were present when the study began, but was not diagnosed clinically. This emphasizes the importance of taking bite-wing radiographs for a more accurate diagnosis prior to applying sealants to clinically diagnosed sticky fissures.

CONCLUSIONS

From this investigation, the following conclusions may be reached: (1) restoring all sticky occlusal fissures cannot be recommended if 22 per cent show no deterioration 30 months later; and (2) under the terms of this study, sealing sticky occlusal surfaces with bis-GMA resin is an effective means of caries control.

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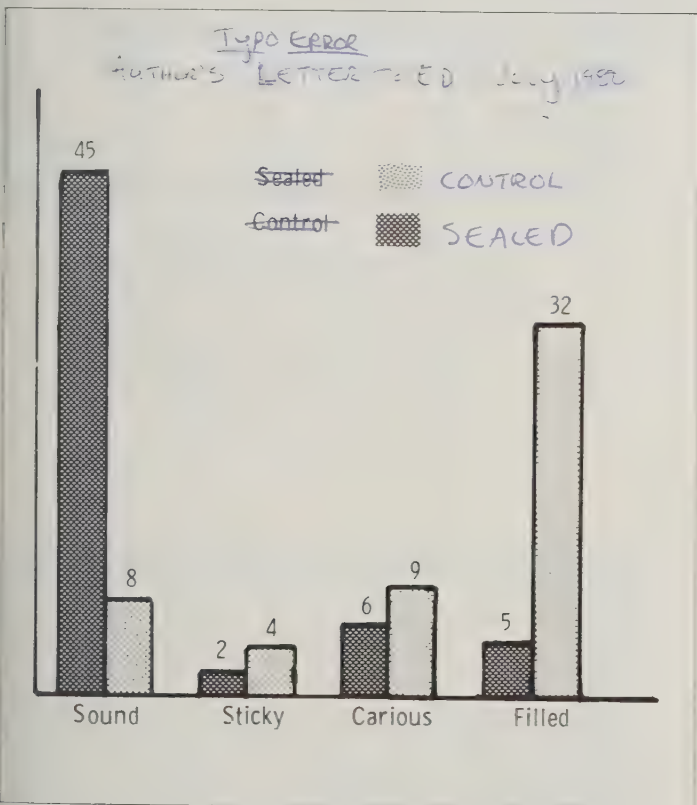


Fig 1 Status of 111 sticky occlusal surfaces in first permanent molars after 30 months.

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The authors wish to acknowledge the assistance of Dr. Roy Waldman, Dental Health Officer, Municipality of Richmond, B.C.

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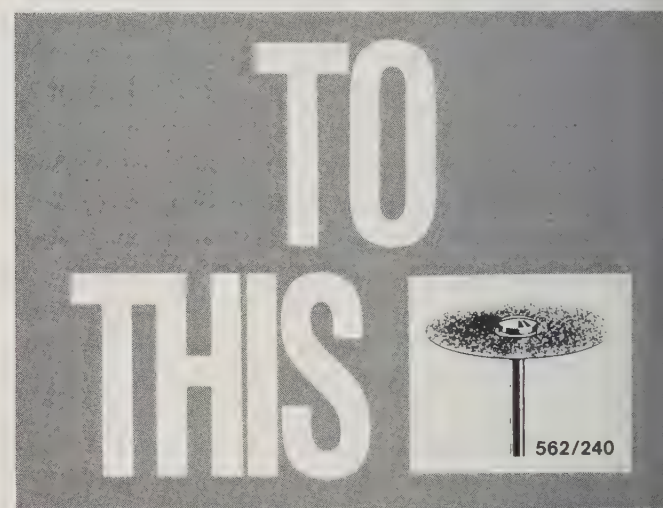
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Chemically polymerized sealant in preventing occlusal caries

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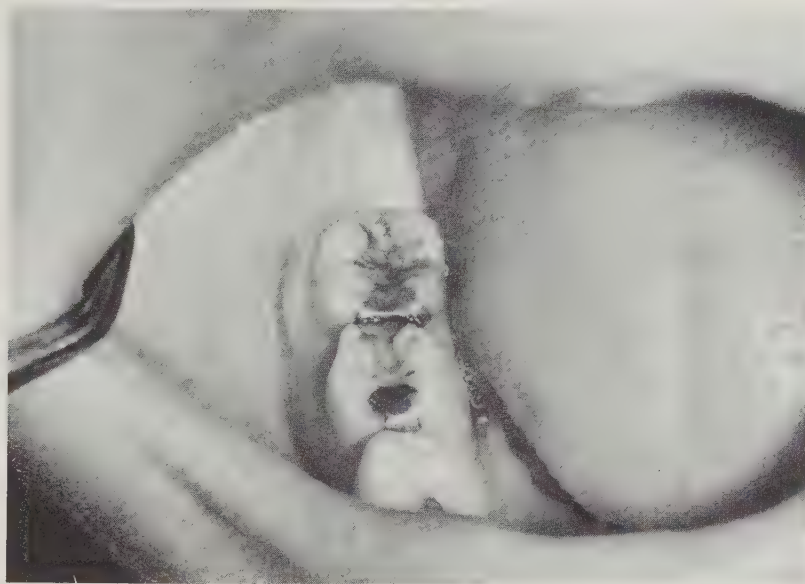


Fig 1 Sealant remnants at the occlusal margins of an amalgam restoration on mandibular second molar.

SUMMARY

This article reports the use of a chemically polymerizing Bis-GMA resin to prevent occlusal caries in permanent molars. Three years after sealing 337 first permanent molars in grade two children, the sealed teeth had a 64 per cent reduction in occlusal caries when compared to unsealed half mouth controls. The retention rate was 85.8 per cent at two years and 74.8 per cent after three years.

SOMMAIRE

Cet article décrit l'usage d'une résine Bis-GMA chimiquement polymérisée afin de prévenir la carie occlusale dans les molaires permanentes. Trois ans après avoir obturé 337 premières molaires permanentes parmi des enfants de la deuxième année scolaire, les dents obturées présentaient un taux de carie occlusale réduit de 64 pour cent comparées aux dents non obturées de la moitié de la bouche des sujets témoins. Le taux de rétention était de 85.5 pour cent après deux ans et de 74.8 pour cent après trois ans.

In 1975, a long-term clinical study of an adhesive sealant was initiated in a non-fluoridated suburb of Vancouver, B.C. Using the half-mouth technique, a pink-coloured self-curing Bis-GMA resin* was placed on 425 newly erupted first permanent molars. Following a prophylaxis with an acid etch prophylaxis paste,* the procedure was: dry, etch, wash, dry, seal. The curing time was 120 seconds and the etchant contained 37 per cent orthophosphoric acid; the rubber dam was not used. Sound and sticky surfaces were included in this study. The aim of the study was to evaluate a self-polymerizing sealant's retentiveness and ability to reduce occlusal caries. The 12 and 24 month results have been reported previously.¹

The current investigation reports the results of re-examination after three years. The examinations were conducted in school health rooms, using portable light, mouth mirrors and explorers. The one examiner also con-

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ducted the initial, 12 and 24 month examinations. Pre-data were not available to the examiner. The sealants were recorded as intact, partially lost, or completely lost. The surfaces were recorded as sound, sticky, carious or filled. Surfaces resistant to explorer removal after moderate pressure and without visual signs of caries, were deemed sticky.

RESULTS

Three hundred and thirty-seven pairs of first permanent molars were available for re-examination after three years. Of the 337 initially sealed surfaces, 252 (74.8 per cent) remained intact, 46 were partially lost and 39 were completely lost (**Table 1**). Forty of the 46 partially lost sealants were on maxillary molars with 30 of the 40 on the distal fossa. Sealants were recorded as lost when restorations were present, even though 10 amalgams had sealant remnants around their margins (**Fig 1**). **Table 2** shows the caries rate after 36 months. The number of control teeth becoming carious or filled was 161 (47.8 per cent), while only 58 (17.2 per cent) of the sealed teeth became carious or filled. Sixteen sealed and 18 control teeth with two surface restorations were recorded as filled even though the occlusal surfaces could have been sound when the restorations were placed.

DISCUSSION

The 74.8 per cent complete retention after three years compares favorably with other studies. Horowitz² reports

a 52 per cent retention rate after three years and 42 per cent after five years, using a clear sealant polymerized by ultraviolet light. Rock³ had a retention rate of 70 per cent after three years using a similar material on 161 paired permanent teeth, of which 126 were premolars. In 1978, Doyle⁴ reported a 65 per cent retention rate in permanent molars and premolars after three years.

The 337 sealed, first permanent molars in this study, had 103 less-filled or carious occlusal surfaces when compared to unsealed controls. This is a 63.98 per cent reduction in occlusal caries 36 months after placement of the sealants $\left(\frac{161-58}{161} \times 100 \right)$. One could consider that the 103 molars

have been protected from occlusal caries for every 337 molars sealed; a benefit-to-effort ratio of about 1:3. Cons⁵ reports caries reduction in first permanent molars after three years of 38.2 per cent in distolingual grooves, 46.8 per cent in maxillary mesial pits and 43.6 per cent in mandibular occlusals. Using similar UV systems, after four years, Going⁶ reported a caries reduction of 43 per cent, Horowitz² a 45 per cent reduction and Leake⁷ a 21.6 per cent reduction. Bojanini⁸ reports a caries reduction rate of 76.5 per cent after three years, using a self-curing Bis-GMA resin.

The pink colour of the sealant enhanced detection immediately after application and at subsequent examinations. No complaints or inquiries were received from the children or their parents. Under the terms of this study, a chemically polymerizing Bis-GMA resin is an effective means of preventing occlusal caries in permanent molars.

TABLE 1

Retention of sealant in 337 first permanent molars 36 months after application							
	Intact		Partial loss		Complete loss		Totals
	No.	%	No.	%	No.	%	
Maxillary	106	67.1	40	25.3	12	7.6	158
Mandibular	146	81.6	6	3.3	27	15.1	179
Total	252	74.8	46	13.6	39	11.6	337

TABLE 2

Caries rate after 36 months in 337 pairs of first permanent molars							
	At risk	Caries		Filled		Total	
		No.	%	No.	%	No.	%
Control	337	41	12.2	120	35.6	161	47.8
Sealed	337	10	3.0	48	14.2	58	17.2

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Although most dentists arrive at solutions to problems without formal awareness of operative skills, awareness of the inherent process increases a dentist's ability to synthesize his knowledge in solving problems in diagnosis. This article examines problem solving skills as a perhaps overlooked, yet integral part, of diagnosis and treatment planning. The necessity, the educational setting, the phases of problem solving, the student/teacher interaction, and the responsibilities of the teacher to motivate problem solving behaviour are discussed.

Teaching problem-solving skills

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Webster's New Collegiate Dictionary defines diagnosis as "an investigation or analysis of the cause or nature of a condition, situation or problem." Thus, diagnosis involves the systematic analysis of a problem, just as a dental treatment plan involves the same analytical process. Even though the principles of diagnosis are formalized in dental curricula through courses in diagnosis and treatment planning, the underlying *principles* of problem solving may be lost to the student. Perhaps the reason more formalized courses in dental problem solving have not been developed is because many diagnoses seem obvious or superficial, and the teacher presents himself as a model of intuitive thinking.

In a recent survey of diplomates of the American Board of Endodontics, the diplomates were asked to rate the various aspects of their specialty with respect to difficulty.² Sixty-five per cent of the respondents stated that diagnosis was the most difficult area in their practice. It can be assumed diplomates possess the *information* necessary to arrive at a solution to a diagnostic

problem; therefore, the question concerns whether the difficulty in diagnosis lies in lack of understanding the informational *sorting process*.

Dewey³ stated that "true education is much more than mere transmission of information: it should encourage the development of the natural tendencies . . . , especially the tendency of inquiry." More recently, Bruner⁴ stated that the benefits to be derived from the development of problem solving skills include: an increased intellectual potency, a desire for continuing discovery, an acquisition of discovery methods while learning basic information, and a conservation of memory since the materials are learned or organized in terms of the student's own structure and frame of reference.

We should thus begin to understand the scope of what is currently being taught. Problem solving is integral to diagnosis, but it is also integral to the whole decision making process that is collectively called dentistry. Further, problem solving techniques aid in developing and nurturing intellectual curiosity so necessary for continued professional development.

TEACHING PROBLEM SOLVING

Taylor⁵ suggests that creativity, problem solving, and decision making are essentially the same when looked at in terms of processes but they are different when viewed in terms of results. As a process, each involves a variety of thinking activities. In terms of results, creativity emerges as a production of ideas, problem solving as a solution for problems and decision making as a choice of alternative courses of action.

The method used for teaching problem solving techniques is of great importance.⁶ The concepts, principles and necessary background information of the subject matter must be taught before quality decisions can be routinely expected from the student. Further, the teacher must be supportive of free inquiry while imparting the necessary information. It should be stressed that while problem solving is a method to bring about a change, change does not have to be haphazard.

Finally, in teaching problem solving, the instructor must bear in mind there is an inherent difference in problem solving and information-gathering abilities among students. The encouragement of both productivity of ideas and free expression must be approached with sympathy.

The objective of teaching students the skill of problem solving is to aid them in identifying, understanding and discriminating the nature and etiology of a problem. There are several theories on how to teach this skill. Griffiths⁷ suggests the following model to aid in problem solving:

-
1. Recognize, limit, and define the problem.
 2. Analyze and evaluate the problem.
 3. Establish criteria by which the solution will be evaluated as acceptable.
 4. Collect data.
 5. Select the preferred solution (test them in advance).
 6. Implement the solution.
-

It should be remembered that some of these steps not only receive more emphasis, but also can be done simultaneously. Wallas⁸ divides the problem solving skill into four basic phases: preparation, incubation, illumination and verification. He states that preparation is the phase devoted to the accumulation and mastery of information. It is an initial exposure of the student to a problem and involves cognitive learning. Incubation is the phase of

problem solving that involves students sorting out ideas that are potential solutions to his/her problem. During incubation the discovery is made that there are two types of data: germane and extraneous. The student must learn to discriminate between those facts that are helpful and those that are not in solving the particular problem, and he must further learn to determine criteria on the hierarchy of possible solutions from the accumulated data. Illumination is the product of the intellectual sorting and weighing of the amassed data to arrive at a viable solution to the problem. Verification is the empirical testing of the tentative solution arrived at during the illumination phase of problem solving.

“ . . . problem solving or thinking is a “participant sport,” necessitating individual student involvement in practice sessions . . . feedback is an important aspect of securing the desired response . . . ”

Next, the student must be encouraged to develop and refine his problem solving acumen. He must understand that mastery of basic informational material, coupled with a problem solving strategy, will lead to the solution of problems. He must be taught how to assemble data for the purposes of making a diagnosis. The approach must be stressed as both analytical and intuitive. It is the responsibility of the teachers to use examples of complex treatment problems, break them down into their component parts and, finally, reassemble these parts to arrive at a diagnosis. Just as examples are necessary, student participation is paramount. Since there are inherent differences in problem solving abilities in individuals, each person must be aware of their own limitations and deficiencies.

In most instances, the student develops his own thinking process by trial and error. Many will become quite adept at problem solving techniques without ever being able to describe the process. Without this increased level of awareness, problem solving will frequently be affected by subconscious personal attitudes and involvement.

A similar division of problem-solving phases was described by Polya.⁹ His approach was originally developed as a means of solving problems in mathematics and these strategies or "devices" which he described were termed heuristics. The four phases are: understand the problem, devise a plan, carry out the plan and assess the results.

Thus far, we have discussed the necessity of problem solving at the dental level, the educational setting necessary for problem solving, and the general steps involved. Let us now examine the student/teacher interaction which gives rise to problem solving behaviour. Crutchfield¹⁰ and Suchman¹¹ have developed a list of six guidelines for teachers which they feel encourage the development of problem solving.

The guidelines are:

1. Help students to recognize and define problems.
2. Assist students to ask relevant questions and to carefully examine all available data.
3. Encourage the generation of many ideas in an atmosphere that is free and intuitive, realizing, however, that problem solving must be approached with a critical attitude.
4. Encourage students to develop persistence in problem solving.
5. Help students to obtain feedback on their own performance in problem solving. Thinking is a "participant sport."

In brief, concepts inherently lead to questions or the generation of problems. Problems must be systematically approached in order to arrive at their own reward — a solution. Solutions, however, can only come through painstaking data collection and organization.

CONCLUSIONS

As Crutchfield and Suchman stated, problem solving or thinking is a "participant sport", thus, necessitating individual student involvement in problem solving practice sessions. However, as with any type of conditioned behaviour, feedback is an important aspect of securing the desired response, and the student must be aware of the effectiveness or deficiencies in his performance on an individual basis.

The transfer of cognitive skills is facilitated when the student is shown how problem solving techniques will benefit his practice and make treatments more effective. For example, he must be shown how simple skill

mastery, as interpretation of radiographic landmarks, can be utilized to make decisions in a more complex diagnosis, i.e., coupling pathologic radiographic lesions and a blood chemistry evaluation.

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Announcements

We urge readers to confirm meeting dates with the contact listed with each announcement.

Canada

Canadian Dental Association, 1980 National Convention, Halifax, Nova Scotia, July 13-16, 1980. Contact: Dr. T.D. Ingham, Nova Scotia Dental Association, P.O. Box 604, Halifax, N.S. B3J 2R7.

L'Association Dentaire Canadienne, Congrès national 1980, Halifax, Nouvelle-Écosse, 13-16 juillet 1980. Pour renseignements: Dr. T.D. Ingham, Association Dentaire de la Nouvelle-Écosse, B.P. 604, Halifax, N.-É. B3J 2R7.

April

Ontario Dental Association 113th Annual Spring Meeting, The Sheraton Centre, Toronto, Ontario, April 27-30, 1980. Contact: Mrs. W.C. Durham, 234 St. George Street, Toronto, Ontario M5R 2P1.

May

Canadian Academy of Periodontology Annual Meeting, Chateau Champlain Hotel, Montreal, Que., May 16-19, 1980. Contact: Dr. J.P. Masson, Drummond Medical Building, 1414 rue Drummond, Suite 1110, Montreal, Que. H3G 1W1.

Annual Convention of the College of Dental Surgeons of Saskatchewan, Yorkton, Saskatchewan, May 22-24, 1980. Contact: Dr. H.J. Large, 10 Dunlop Block, Yorkton, Sask. S3N 0K4.

British Columbia College of Dental Surgeons 1980 Convention, Hyatt Regency Hotel, Vancouver, May 25-28, 1980. For further information, please contact: Venue West Ltd., 1704 — 1200 Alberni Street, Vancouver, B.C. V6E 1A6, phone: (604) 681-5226.

Les journées dentaires du Québec, Queen Elizabeth Hotel, Montreal, Quebec, May 25-29, 1980. Contact: Doctor Morton Lang, 5253 Décarie, Suite 210, Montreal, P.Q. H3W 3C3.

June

The Royal College of Dentists of Canada, Annual meeting and convocation, Toronto, Ontario, June 19-21, 1980. Contact: Dr. J.E. Speck, 170 St. George Street, Suite 614, Toronto, Ont. M5R 2M8.

July

Canadian Academy of Restorative Dentistry Annual Scientific Sessions, Chateau Halifax, Halifax, Nova Scotia, July 11-12, 1980. Contact: Dr. D.C.T. MacIntosh, Scientific Chairman, 200 Medical Arts Building, 5880 Spring Garden Rd., Halifax, N.S. B3H 1Y1.

Canadian Academy of Prosthodontics, Halifax, Nova Scotia, July 11-12, 1980. Contact: Dr. B.M. Jackson, secretary-treasurer, 22-22 Water St. South, Kitchener, Ont. N2G 4K4.

Canadian Academy of Endodontics 1980 Annual Meeting, Chateau Halifax, Halifax, Nova Scotia, July 12-13, 1980. Contact: Dr. Tom Larder, 5991 Spring Garden Road, Halifax, N.S. B3H 1Y6.

The 1980 Annual Meeting & Scientific Sessions of the Canadian Association of Orthodontists, Chateau Halifax, Halifax, Nova Scotia, July 13-16, 1980. Contact: Dr. Wayne Barro, 599 Portland Street, Dartmouth, N.S. V2W 2M5. Phone: (902) 434-2177.

Canadian Dental Hygienists' Association, 1980 Convention, Halifax, Nova Scotia, July 14-16, 1980. Contact: Mrs. Kim McGrail, 3 Beech Street, Bedford N.S. B4A 1T1.

1980 AHA/CHA Convention & Exhibition, Montreal, Quebec. Convention headquarters will be Queen Elizabeth Hotel for C.H.A. and headquarters for A.H.A. will be Place Bonaventure & Chateau Champlain. Exhibition headquarters will be Place Bonaventure, July 28-31, 1980. Contact Mr. Paul

Brown or Mrs. Joan Roche, phone: (613) 238-8005.

September

Canadian Dental Association Board of Governors Meeting, Four Seasons Hotel, Ottawa, September 26-27, 1980.

The Canadian Association of Oral and Maxillofacial Surgeons 1980 Clinical Symposium on Current Concepts in Temporomandibular Joint: Diagnosis and Management, Harbour Castle Hilton, Toronto, Ontario, November 1-3, 1980. Contact: Dr. S.J. Levitz, #212—77 Queensway West, Mississauga, Ont. L5B 1B7.

November

Toronto Academy of Dentistry, 1980 Winter Clinic, Royal York Hotel, Toronto, Thursday November 27, 1980. Contact: Academy of Dentistry, 234 St. George Street, Toronto, M5R 2P2. Phone: (416) 967-5649.

International

May

Schweizerische Zahnärzte-Gesellschaft (SSO), Interlaken, Switzerland, May, 1980. Contact: Franz Plattner, Chefredaktor des Bulletins, Ottoplatz 21, 7000 Chur, Switzerland.

Alabama Implant Congress VI, Birmingham, Alabama, May 1-4, 1980. Contact: Dr. H. Ford Turner, Alabama Implant Study Group, P.O. Box 4682, Birmingham, AL 35206, U.S.A.

Northern California Society of Oral and Maxillofacial Surgeons, Reno, Nevada, May 11-15, 1980. Contact: Mr. Edwin E. Peara, 2809 G. Street, Merced, CA 95340, U.S.A.

American Academy of Oral Pathology, San Antonio, Texas, U.S.A., May 12-16, 1980. Contact: Dr. Arthur Miller, School of Dentistry, Temple University, 3223 N. Broad St., Philadelphia, PA 19140, U.S.A.

Academy of Denture Prosthetics, Daytona Beach, Florida, U.S.A., May 18-23, 1980. Contact: Dr. William R. Laney, Dept. of Dentistry, Mayo Clinic, Rochester, MN 55901, U.S.A.

American Academy of Craniomandibular Disorders, Chicago, May 22-24, 1980. Contact: Dr. William Danzig, 2021 Ygnacio Valley Road, Walnut Creek, CA 94598, U.S.A.

Tenth International Meeting on Dental Implants and Transplants, Bologna, Italy, May 23-25, 1980. Contact: Professor G. Muratori, Gruppo Italiano Studi Implantari Sezione Congressi, Via S. Gervasio 1, I-40121, Bologna, Italy.

American Academy of Pedodontics, San Francisco, California, U.S.A., May 24-27, 1980. Contact: Miss Merle C. Hunter, 211 E. Chicago Ave., Chicago, IL 60611, U.S.A.

June

Eighth International Conference on Oral Biology, Tokyo, Japan, June 1-3, 1980. Its theme will be: Oral Disease Prevention — its implications and applications. An interesting study tour program in Japan, China and Thailand is being arranged in connection with the conference. Contact: Dr. George S. Beagrie, University of British Columbia, Faculty of Dentistry, 2075 Westbrook Place, Vancouver, B.C. V6T 1W5.

The 58th General Session of the International Association for Dental Research, Royal Hotel, Osaka, Japan, June 5-8, 1980. Contact: Yojiro Kawamura, chairman I.A.D.R. Organizing Committee, School of Dentistry, Osaka University, 4-3-48 Nakanoshima, Kita-ku, Osaka, Japan.

Symposium on the Prevention in Stomatology, Dolny Kubin, Czechoslovakia, June 5-7, 1980. Contact: Prim. MUDr. V. Tažandlák, Dúnz — Dolný Kubin, Nemocničná ul. 4, 026 14 Dolný Kubin, Czechoslovakia.

58th IADR Congress, Osaka, Japan, June

5-8, 1980. Contact: Dr. Yojiro Kawamura, Osaka University Dental School, 32 Joan-cho, Kitaku, Osaka, 530 Japan.

International Congress on Implantology and Biomaterials in Stomatology, Kyoto, Japan, June 9-10, 1980. Contact: Prof. H. Kawahara, International Congress of Implantology and Biomaterials in Stomatology, c/o Kyoto International Conference Hall, Takaragaike, Sakyo-ku, Kyoto 606, Japan.

The Marin County Dental Society, French Polynesia (Four Islands), June 15-17, 1980. Contact: Dr. James H. McCray, 231-B Flamingo Road, Mill Valley, CA 94941, U.S.A.

Seventh International Conference on Oral Surgery, Trinity College, Dublin, Ireland, June 23-26, 1980. Contact: Professor I.A. Findlay, Chairman, Organizing Committee, Seventh International Conference on Oral Surgery, 12 Pembroke Park, Dublin 4, Ireland.

86th Meeting of the American Dental Society of Europe, Stratford-upon-Avon Hilton, Stratford-upon-Avon, England, June 24-28, 1980. Contact: The Secretary, Dr. Brian J. Parkins, 57 Portland Place, London W1N 3AH, England.

Fifth International Congress of Dento-Maxillo-Facial Radiology, Portland, Oregon, U.S.A., June 28-July 2, 1980. Contact: Dr. Walter H. Fox, 1400 Mill Street, Eugene, OR 97401, U.S.A.

July

Fifth Congress of the International Association of Dentistry for the Handicapped, Jerusalem, July 6-11, 1980. Contact: Secretariat, Fifth Congress of the International Association of Dentistry for the Handicapped, P.O. Box 3473, Tel Aviv, Israel.

British Dental Association Centenary Meeting, London, England, July 10-11, 1980. Contact: R.B. Allen, secretary, British Dental Association, 64 Wimpole Street, London W1M 8AI, England.

Israel Dental Association's International Meeting, Tel Aviv, Israel, July 13-19, 1980. Contact: Dr. S. Perlmutter, Israel Dental Association, 49 Bar-Kochba Street, Tel Aviv, Israel.

Fourth International Symposium on the Prevention & Detection of Cancer, Wembley Conference Centre, London, England, July 26-31, 1980. Contact: Fourth International Symposium on Prevention & Detection of Cancer, Room 1909, 375 Park Avenue, New York, N.Y. 10022, U.S.A.

August

New Zealand Dental Association Jubilee Conference 1905-1980, Dunedin, New Zealand, August 25-29, 1980. Contact: The Conference Secretary, P.O. Box 647, Dunedin, New Zealand.

Fédération Dentaire Internationale, International Dental Show, Hamburg, Germany, August 25-September 7, 1980. Contact: M. Jean-Pierre Schweizer, sales manager, Conference Travel of Canada Ltd., 11 Adelaide Street West, Suite 309, Toronto, Ont., Can., M5H 1L9.

September

Fédération Dentaire Internationale, 68th Annual World Dental Congress, Hamburg, Germany, September 2-7, 1980. Contact: Dr. R. Braun, Bundesverband der Deutschen Zahnärzte, Universitätsstrasse 73, 5000 Köln 41, Germany.

International Association for Orthodontics, Reno, Nevada, September 3-7, 1980. Contact: Ms. Joanna Carey, 645 N. Michigan Avenue, Chicago, IL 60611, U.S.A.

American Association of Oral and Maxillofacial Surgeons, San Francisco, September 5-9, 1980. Contact: Mr. Bernard J. Degen II, Suite 930, 211 East Chicago Avenue, Chicago, IL 60611, U.S.A.

Federation of Prosthodontic Organizations, San Francisco, September 5-9, 1980. Contact: Mr. Eric Bishop, Suite 1636, 211 East Chicago Avenue, Chicago, IL 60611, U.S.A.

Federation of Prosthodontic Organizations, Chicago, Illinois, U.S.A., Septem-

ber 15-16, 1980. Contact: Mr. Eric M. Bishop, Suite 1636, 211 East Chicago Ave., Chicago, IL 60611, U.S.A.

Genoa International Fair — 10th Exponential, Genoa, September 24-27, 1980. Contact: Fiera di Genova, P. le J.F. Kennedy, 16129 Genova.

American Society of Psychosomatic Dentistry and Medicine, San Francisco, September 25-28, 1980. Contact: Mr. Leo Wollman, 2802 Mermaid Avenue, Brooklyn, NY 11224, U.S.A.

October

Third National Convention and III International Conference of Oral Health, Lima, Peru, October 1-4, 1980. Contact: Dr. Gilberto Dominguez, Av. Benavides 264-902, Lima 18, Peru, South America.

International College of Dentists Annual Session, New Orleans Hilton, October 8-13, 1980. The U.S.A. Section Convocation and Banquet, Saturday October 11, 1980. Reservations may be made by sending a cheque for

\$25 per person to the International College of Dentists, 3138 Commodore Plaza, Miami, FL 33133, U.S.A.

American Society of Dentistry for Children, New Orleans, October 9-11, 1980. Contact: Ms. Dorothy J. McCord, Suite 920, 211 East Chicago Avenue, Chicago IL 60611, U.S.A.

Eighth International Uruguayan Dental Congress, Second Buccal-Maxillofacial Congress of Cono Sur, and Second Periodontal Week of Rio Plata, Montevideo, Uruguay, October 12-18, 1980. Contact: Secretaria, Avda. Liberador Brigadier Gral. Lacalleja 1464-Piso 13, Montevideo, Uruguay.

American Academy of Gnathologic Orthopedics, Williamsburg, Virginia, October 21-26, 1980. Contact: Dr. Laren W. Teutsch, 4124 Farnam Street, Omaha, NE 68131, U.S.A.

November

National and International Dental Meeting, Colegio de Dentistas de Chile, Avda. Santa Maria No. 1990, Santiago, Chile.

Prevention in different levels and specialties. November 23-26, 1980. Contact: Dr. Victor Daniels, P.O. Box 252 V., Santiago, Chile.

1981—

4th International Congress on Cleft Palate and Related Craniofacial Anomalies, Acapulco, Mexico, May 3-8, 1981. Deadline for scientific contributions and advance registration at reduced fees is August 31, 1980. Contact: General Secretariat, 4th International Congress on Cleft Palate, Apdo. Postal 18-986, Mexico 18, D.F. — Mexico.

Fédération Dentaire Internationale, 69TH ANNUAL WORLD DENTAL CONGRESS, Rio de Janeiro, Brazil, September 5-9, 1981.

Fédération Dentaire Internationale, 70TH ANNUAL WORLD DENTAL CONGRESS, Vienna, Austria, October 11-16, 1982.

Fédération Dentaire Internationale, 71ST ANNUAL WORLD DENTAL CONGRESS, Tokyo, Japan, October 1983.



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(613) 725-2161

ONTARIO — Dentist required for underserved area. Ministry of Health grant available. Mara Medical Centre, Modern professional building located in Brechin, Ontario, 70 miles north of Toronto on Lake Simcoe. Reply to: Mara Medical Centre Board, P.O. Box 130, Brechin, Ont. L0K 1B0.

ONTARIO — Toronto. Paedodontist required for busy Paedodontic practice in north Metropolitan Toronto. Opportunities available for partnership. Position available immediately. Applicant must be certified to practise in Ontario. Reply in strict confidence to CDA Box Number 1912.

ONTARIO — Toronto. Part-time dental hygienist wanted to work in Pape-Danforth area. To apply, please call: (416) 469-2320.

ONTARIO — Toronto. Periodontist to join busy group practice, within 50 miles west of Toronto, full or part-time. New professional building, fully equipped, etc. Area currently underserved by specialist. Reply in confidence to CDA Box Number 1905.

UNIVERSITY OF TORONTO — Faculty of Dentistry, seeks applications to fill a full-time tenure stream position in Restorative Dentistry. The successful applicant will be expected to teach in operative dentistry and fixed prosthodontics and to undertake research in his field. Academic rank and salary will be commensurate with qualifications and experience. Application should be forwarded to the Chairman of the Search Committee, Dr. J.E. Speck, Faculty of Dentistry, University of Toronto, 124 Edward Street, Toronto, Ont. M5G 1G6. Closing date for applications April 30, 1980.

MCGILL UNIVERSITY — Faculty of Dentistry. Applications are invited for full-time positions, subject to availability of funds, in Operative Dentistry, Oral Diagnosis and Removable Prosthodontics. Duties to commence September 1, 1980. Applicants must be graduates of an accredited dental program preferably with graduate training and prepared to meet the requirements for licensure in the Province of Quebec. Academic rank and salary will be commensurate with qualifications and experience. Enquiries, accompanied by curriculum vitae, to be sent to: Dean's Office, Faculty of Dentistry, McGill University, 3640 University Street, Montreal, P.Q. H3A 2B2.

Opportunities Wanted

ONTARIO — Dentist seven years in private practice, experienced in all phases of general dentistry, looking to re-locate to eastern Ontario, preferably Ottawa area. Interested in associateship/partnership or group practice. Reply to CDA Box Number 1973.

ONTARIO — Ottawa area. Dentist with five years experience in private practice wishes to purchase practice in Ottawa or surrounding area. Will consider associateship leading to purchase or partnership. All information confidential. Please reply to CDA Box Number 1969.

PERIODONTIST — Aged 28, completing board certified program June, 1980, seeks associateship or purchase of a perio practice anywhere in Canada. Please reply to CDA Box Number 1976.

ACUPUNCTURE SEMINAR

Topic: Dentistry and Facial Pain. May 10-11, 1980. Ramada Inn, 111 Carleton Street, Toronto.

For further information contact:

Acupuncture Foundation of Canada
10 St. Mary Street, Suite 503
Toronto, Ont. M4Y 1P9
Phone: (416) 961-4131.

Miscellaneous

FOR SALE: Dispersalloy. 340 Troy ounces regular pellet, six grains each. Three years old. Regular cost less 20%. Reply to: Dr. Barrie Bourne, Box 1108, Rocky Mountain House, Alta. T0M 1T0. Phone: (403) 845-2795 after 6.00 p.m.

UNIVERSITY OF TORONTO

ORAL SURGERY

The Faculty of Dentistry, University of Toronto, seeks applications for a full-time tenure-stream position in the discipline of oral surgery. Applicants must have an appropriate qualification in oral surgery and will be expected to become involved in undergraduate and post-graduate teaching and to undertake research. Operating room privileges are available.

The appointment will be at the Assistant/Associate Professor level. The application, together with curriculum vitae, should be sent to: Dr. A.M. Hunt, Chairman, Search Committee, Faculty of Dentistry, University of Toronto, 124 Edward Street, Toronto, Ontario M5G 1G6.

Closing date for applications: May 15, 1980.

FACULTY OF DENTISTRY DALHOUSIE UNIVERSITY

CHAIRMAN DEPARTMENT OF RESTORATIVE DENTISTRY

Applications and nominations are invited for the position of Chairman of the Department of Restorative Dentistry. Included in the department are the five Divisions of Operative Dentistry (including Endodontics and Fixed Prosthodontics), Removable Prosthodontics, Periodontics, and Dental Biomaterials Science.

The successful candidate should have significant experience in academic administration, research and clinical care; as well as advanced education in one of the disciplines of the department.

The Faculty of Dentistry is expected to occupy new facilities beginning in the summer of 1980, which will make possible a significant expansion in undergraduate and graduate student enrollment and an increase in research potential.

Salary and rank will be based upon qualifications and experience. Applications and nominations together with a curriculum vitae should be submitted as soon as possible and no later than June 1st 1980 to: —

Professor Derek W. Jones
Faculty of Dentistry
Dalhousie University
Halifax, Nova Scotia
Canada
B3H 3J5

PERTH DENTAL HOSPITAL

WESTERN AUSTRALIA CO-ORDINATING HEAD OF RESTORATIVE SERVICES

Written applications are invited from suitably qualified dentists for the above position.

Salary: \$34,085 per annum

1. Duties:

- 1.1 This is one of the three senior clinical positions within the Hospital. The appointee is responsible for providing special patient services in the field of Restorative Dentistry supported by a full-time periodontist and part-time endodontist.
- 1.2 Co-ordinating the work of the Departments of Operative Dentistry and Prosthodontics in conjunction with the respective heads of departments. Promoting and sustaining clinical research.
- 1.3 Responsible for directing the specialist dental laboratory services that support the Hospital and Dental School Clinics.
- 1.4 The appointee will be offered appropriate teaching responsibilities in the Dental School, subject to Faculty approval.

2. Qualifications:

- 2.1 Applicants must be registerable with the Dental Board of Western Australia, and possess a higher qualification applicable to the discipline.
- 2.2 Considerable clinical experience, together with a sound academic and practical knowledge of modern dental procedures.
- 2.3 Administrative experience or indications that administrative capacity exists will be an advantage.

A Memorandum of Information on the position has been prepared and further enquiries should be addressed to the Director, Hospital Dental Services, Perth Dental Hospital.

Applications including personal and professional details and a recent photograph should be endorsed "Application — Head of Restorative Dentistry" and addressed to: The Chairman, Perth Dental Hospital Board, 196 Goderich Street, Perth, Western Australia, 6000.

Applicants are required to contact two referees and request them to forward their references directly to the Chairman, to be received prior to the closing date.

Closing date for applications: 16th May 1980

K.J. Lamb,
ADMINISTRATOR.

Convention 1980

CDA Convention '80 Spouses' Program

Monday — 14th July

11 A.M. to 12 noon — luncheon and fashion show at the Lord Nelson Hotel — Fashions by Carolyn Stewart of the Teazer in Mahone Bay.

Tuesday — 15th July — Bus Tours

1. South Shore — with visits to Mahone Bay — antique and gift shops. Lunch at the Captain's House in the historic village of Chester.
2. Picturesque Annapolis Valley — Home of Evangeline — visits to Cape Blomidon, Historic Prescott House and gift shops — lunch at the Old Orchard Inn situated at Greenwich between Kentville and Wolfville.

Bus and Walking tours of the old and new sections of the city — Boat Tours in the Harbour — Bus Tours to Peggy's Cove — are also available and we can help you arrange for these.

The Hospitality suite will be open mornings and afternoons and will be stocked with many repair and emergency supplies (got a headache? need a needle? or an iron?) Crafts people will be demonstrating their art and we will have light refreshments served — so meet old friends and make new ones, come and have a "chat and cuppa"

From Registration on — throughout the Convention the girls with the N.S. Tartan Scarves will be most happy to help you, in any way possible, to make your visit to Nova Scotia a memorable one.

Pat Bonang and Jean Dexter

This note might be of interest

The Lunenburg Craft Festival dates are July 12 and 13th, of interest to families who might be coming to Nova Scotia before the convention. Present day Lunenburg has some of the best preserved 19th century Streetscapes in all of Canada. Special mention should be given to the Fisheries Museum and to the Aquarium of Native Fish also the Craft and Antique Shops.

Organizing Committee

The organizing committee includes: Dr. George Clark — Accommodation; Suzanne Mader — Dental Assistants; Kim McGrail — Dental Hygienists; Dr. Joe Elias — Exhibitors; Dr. Phil Amys — Information & Public Relations; Dr. Carl Dexter — Protocol; Dr. David Precious — Scientific chairman; Drs. Elaine Gordon and Ralph Conter — Social; Jean Dexter and Pat Bonang — Spouses' Program; Dr. Art Ervin — Table Clinics; and Dr. Cliff Murray — Transportation.

Continuing Education in Dentistry, Dalhousie University, is looking after registration services and the scientific sessions.

The Canadian Dental Nurses & Assistants Association and the Canadian Dental Hygienists Association are planning meetings in conjunction with the Canadian Dental Association Convention. They will take in some of the sessions planned for dentists and they have arranged activities specifically for their own interests.

The Arts Centre, Dalhousie University, will be the site for all presentations, the exhibits and the student table clinics.

Details of the Convention will appear in future issues of the Journal.

Further Information

Detailed information about the 1980 Convention will appear in future issues of the Journal.

Registration forms are on pages 273 and 276.

July 13-16, 1980
Halifax, Nova Scotia

National Congrès Convention National

Canadian Dental Association L'Association Dentaire Canadienne

13-16 juillet 1980
Halifax, Nouvelle-Écosse

REGISTRATION FORM

PLEASE PRINT OR TYPE

Name _____

Address _____

Receipt will be sent to the above. Please use separate forms if individual receipts are required. You may photocopy this form.

ROLE: Please indicate your principal role in CDA, CDHA, CDNAA, e.g., Member, President of Prosthodontic Section, Chairman of Council on Education, etc., after your name.

DENTISTS: Name (For name tag) _____ ROLE _____
CDA Member & Foreign Dentists \$145. before or \$165. after June 1, 1980
Canadian Non-CDA Member \$225. before or \$250. after June 1, 1980

\$ _____

INCLUDES: Scientific Sessions, Exhibits, Sunday opening ceremonies and chowder party, Monday night lobster party, Monday and Tuesday luncheons, Wednesday: Beef-'n-Beer

DENTAL HYGIENISTS: Name (For name tag) _____ ROLE _____
CDHA Member \$75 before or \$105. after June 1, 1980
Non-CDHA Member \$100. before or \$130. after June 1, 1980.

\$ _____

INCLUDES: Scientific Sessions, Exhibits, Sunday opening ceremonies and chowder party, Monday night lobster party, Monday (President's luncheon) Tuesday evening President's reception, Wednesday: Beef-'n-Beer.

DENTAL TECHNICIANS: Name (For name tag) _____ ROLE _____
\$30.00

\$ _____

INCLUDES: Scientific Sessions, Exhibits, Sunday opening ceremonies and chowder party, Wednesday: Beef-'n-Beer

DENTAL NURSES AND ASSISTANTS: Name (For name tag) _____ ROLE _____
CDNAA Member \$75. before \$85. after June 1, 1980 Non-Member \$95. before or \$105. after June 1, 1980.

\$ _____

INCLUDES: Scientific Sessions, Exhibits, Sunday opening ceremonies and chowder party, Monday and Tuesday luncheons, Wednesday Breakfast, Annual Meeting, Harbour Tour, Wednesday: Beef-'n-Beer

HOUSES: (Other than dentists and auxiliaries) Name (For name tag) _____
\$55. before or \$60. after June 1, 1980

\$ _____

INCLUDES: Scientific Sessions, Exhibits, Sunday opening ceremonies and chowder party, Monday Luncheon and fashion show, Monday night lobster party, Tuesday bus tour — Indicate your choice:

Annapolis Valley with lunch, sightseeing and shopping _____

South Shore of Nova Scotia with lunch, antique shopping and sightseeing _____

Monday night lobster party, additional admission tickets \$25.00 each

\$ _____

Tuesday night President's Dinner and Dance \$40.00 per couple

\$ _____

CANCELLATION: Full registration fee refundable up to June 13, 1980.
75 per cent refundable after that date.

TOTAL \$ _____

MAIL TO: CDA National Convention Phone: (902) 424-2248
Continuing Education in Dentistry
Dalhousie University
Halifax, N.S. B3H 3J5

July 13-16, 1980
Halifax, Nova Scotia

National Congrès Convention National

Canadian Dental Association

L'Association Dentaire Canadienne

13-16 juillet 1980
Halifax, Nouvelle-Écosse

FORMULAIRE D'INSCRIPTION

PRIÈRE D'ÉCRIRE EN LETTRES MOULÉES OU À LA MACHINE.)

Nom _____

Adresse _____

Un reçu sera envoyé à l'adresse ci-dessus. Si vous désirez des reçus personnels, on vous prie d'utiliser des formulaires d'inscription individuels. Vous pouvez reproduire ce formulaire.

FONCTION: À la suite de votre nom, on vous prie d'indiquer votre fonction principale au sein de l'ADC, de l'ACHD ou de l'ACGMAD, e.g. membre, président de la division de prosthodontie, président du Conseil de l'Éducation, etc.

DENTISTES: Nom (pour l'étiquette d'identité) _____ FONCTION _____
Membres de l'ADC et dentistes étrangers: \$145. avant ou \$165. après le 1er juin 1980
Canadiens non membres: \$225. avant ou \$250. après le 1er juin 1980 \$ _____

PRIVILÈGES: les conférences scientifiques, les salles d'exposition, les cérémonies d'ouverture et la dégustation de soupes aux poissons le dimanche, le dîner de homard le lundi, le déjeuner les lundi et mardi, la fête "Beer'n Beef" le mercredi

HYGIENISTES DENTAIREs: Nom (pour l'étiquette d'identité) _____ FONCTION _____
Membres de l'ACHD: \$75. avant ou \$105. après le 1er juin 1980
Non membres: \$100. avant ou \$130. après le 1er juin 1980 \$ _____

PRIVILÈGES: les conférences scientifiques, les salles d'exposition, les cérémonies d'ouverture et la dégustation de soupes aux poissons, le dîner de homard le lundi, le déjeuner des lundi (déjeuner du président) et mardi, la soirée de la présidente le mardi, la fête "Beer'n Beef" le mercredi

TECHNICIENS DENTAIREs: Nom (pour l'étiquette d'identité) _____ FONCTION _____
\$30.00 \$ _____

PRIVILÈGES: les conférences scientifiques, les salles d'exposition, les cérémonies d'ouverture et la dégustation de soupes aux poissons le dimanche, la fête "Beer'n Beef" le mercredi

GARDES-MALADES ET ASSISTANTS DENTAIREs: Nom (pour l'étiquette d'identité) _____
FONCTION _____
Membres de l'ACGMAD: \$75. avant et \$85. après le 1er juin 1980 \$ _____

PRIVILÈGES: les conférences scientifiques, les salles d'exposition, les cérémonies d'ouverture et la dégustation de soupes aux poissons le dimanche, le déjeuner les lundi et mardi, le petit-déjeuner du mercredi, l'assemblée annuelle, la visite du port, la fête "Boeuf et bière" le mercredi

CONJOINTS: (autres que les dentistes et que les adjoints) Nom (pour l'étiquette d'identité) _____
\$55. avant ou \$60. après le 1er juin 1980 \$ _____

PRIVILÈGES: les conférences scientifiques, les salles d'exposition, les cérémonies d'ouverture et la dégustation de soupes aux poissons le dimanche, le déjeuner et le défilé de mode le lundi, le dîner de homard, une visite guidée le mardi (indiquez votre choix):
excursion, visite des boutiques et déjeuner dans l'Annapolis Valley
ou excursion, visite des antiquaires et déjeuner sur la côte Sud de la Nouvelle-Écosse

Billets additionnels pour: le dîner de homard le lundi: \$25.00 chacun \$ _____

la soirée du président (dîner et bal): \$40.00 le couple \$ _____

CANCELLATION: Les frais d'inscription sont remboursables en entier jusqu'au 13 juin 1980.
Après cette date, 75 pourcent des frais sont remboursables.

TOTAL \$ _____

PAIEMENT: On vous prie d'envoyer un chèque ou un mandat établi à l'ordre du Congrès national de l'ADC
École supérieure de dentisterie
Université Dalhousie
Halifax, N.-É. B3H 3J5

Téléphone: (902) 424-2248

Congrès de l'ACD '80 Programme des conjoints

Lundi, 14 juillet

11 heures à midi: déjeuner et défilé de modes à l'hôtel Lord Nelson — Créations de Carolyn Stewart du Teazer à Mahone Bay.

Mardi, 15 juillet — Circuits en autobus

1. La Rive Sud: visite de Mahone Bay, des antiquaires et des magasins de nouveautés; déjeuner à la Captain's House dans le village historique de Chester.
2. La pittoresque vallée d'Annapolis: le pays d'Evangéline; visite du Cap Blomidon, de la maison historique de Prescott et des magasins de nouveautés; déjeuner à l'auberge Old Orchard située à Greenwich entre Kentville et Wolfville.

On peut également faire soit des promenades en autobus ou à pied dans les vieux et dans les nouveaux quartiers de la ville, soit des promenades en bateau dans le port, soit une promenade en autobus à Peggy's Cove. On vous aidera à faire les arrangements nécessaires pour ces différentes activités.

Le centre d'accueil (Hospitality suite) sera ouvert le matin et l'après-midi. Vous y trouverez tout ce qu'il faut pour les petits travaux et pour les urgences, que vous souffriez d'une migraine, ayez besoin d'une aiguille à repriser ou désiriez repasser un vêtement. Il y aura aussi des artisans qui feront montre de leurs talents et on y servira des rafraîchissements. Vous pourrez y rencontrer de vieux amis ou en faire de nouveaux. On espère donc vous y voir.

Pendant tout le Congrès, des jeunes filles portant le foulard écossais typique de la Nouvelle-Écosse seront à votre disposition pour vous aider et pour rendre votre séjour à Halifax agréable.

Pat Bonang et Jean Dexter

Également d'intérêt:

Le festival d'artisanat de Lunenburg se tiendra les 12 et 13 juillet et pourra intéresser les familles qui arriveront à Halifax avant le Congrès. Les rues du Lunenburg actuel rappellent le siècle passé et elles sont les mieux préservées du Canada. On peut aussi visiter le Musée des pêcheries, l'Aquarium des poissons du pays, les boutiques d'artisanat et les antiquaires.

July 13-16, 1980
Halifax, Nova Scotia

National Convention

Canadian Dental Association

Congrès National

L'Association Dentaire Canadienne

13-16 juillet, 1980
Halifax, Nouvelle-Écosse

HOTEL RESERVATION FORM FORMULAIRE DE RÉSERVATION DE CHAMBRE D'HOTEL

PLEASE PRINT — LETTRES MOULÉES, S.V.P.

Name — Nom _____

Address-Adresse _____

Tel. No. _____

No. of Adults _____ Children _____ in room.

Nombres d'adultes _____ d'enfants _____ par chambre.

Dentist ☐ Dentiste
Hygienist ☐ Hygiéniste
Assistant ☐ Assistant(e)
Technician ☐ Technicien(ne)

HOTEL List 5 Hotels in order of Preference
Indiquer 5 Hôtels par ordre de préférence

Single ☐ Twin ☐ Apt. ☐
Simple ☐ Jumeaux ☐ Double ☐ Suite ☐ App. ☐

1. _____
2. _____
3. _____
4. _____
5. _____

Do you wish your reservation guaranteed? Yes _____ No _____ Unless guaranteed, reservation will only be held until 6 pm. Room allocation will be made only to convention registrants. Advance payment will be required upon receipt of confirmation. Do not enclose accommodation payment with this form. Do not include accommodation payment in registration cheque.

Désirez-vous garantir votre réservation? Oui _____ Non _____ Sans garantie, votre réservation n'est sûre que si vous arrivez à votre hôtel avant 18 heures. Les chambres seront attribuées seulement à ceux qui s'inscriront au congrès. Dès que votre réservation sera confirmée, le paiement en sera exigé. On vous prie de ne pas joindre le paiement de votre chambre à celui de votre inscription au congrès.

Date arriving — Date d'arrivée _____ AM _____ PM _____ Mode of Travel _____

Date departing — Date de départ _____ AM _____ PM _____ Mode de Transport _____

	Simple Single	Double	Apt. App.	Suite	CODE
Hotel Nova Scotian (CN)	36.	42.	—	—	*car needed — voiture indispensable
+Chateau Halifax (CP)	40.	48.	—	—	-housekeeping units available chambre avec cuisines disponibles
Barrington Inn (Delta)	42.	48.	—	—	@reserved for auxiliaries réservés aux auxiliaires
Lord Nelson	35.	38.	—	—	+pool-piscine
+Citadel Inn	43.50	46.50	—	—	
Carlton Hotel	—	24.-28.	—	50.	
+St. Mary's University Housing	10.	16.	30.	—	
*+Keddy's Motor Inn	28.	36.-40.	—	—	
@+Holiday Inn-Halifax	40.	46.	—	—	
*Holiday Inn-Darhmouth	31.50	—	—	—	
*Wandlyn Inn	32.	40.	—	—	
*+Sea King Motel	24.	29.	—	—	

DEADLINE FOR MAKING ADVANCE RESERVATIONS: June 1, 1980
DATE LIMITE POUR LES DEMANDES DE RÉSERVATIONS: 1er juin, 1980

Return this reservation form to the convention headquarters:
Retourner ce formulaire de réservation au secrétariat du congrès:

Accommodation chairman: Dr. George Clark
Directeur de logement: (902) 422-5967

CDA National Convention
Continuing Education in Dentistry
Dalhousie University
Halifax, N.S. B3H 3J5

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unlimited

Post and Core Technique

CANAL PREPARATION

Following endodontic treatment regardless of canal morphology, the smallest size Para•Post drill is used to initiate the drilling of a cylindrical canal to the ultimate desired depth.

Canal depth should be 1/2 to 2/3 the length of the root. Determine by measurement or by x-ray verification.

Successively larger color coded Para•Post drills are used to enlarge the canal to the desired diameter to the previously established depth.



POST SELECTION

After completion of the canal, a corresponding sized stainless steel Para•Post is tried in the prepared canal and shortened to the desired height. In multi-rooted dentition, the extending posts should be bent to the most advantageous position.



CORE RETENTION AND POST CEMENTATION

Before cementing the posts, TMS[®] LINK Series[®] self-threading pins may be used for additional retention and to prevent rotation of the core. TMS Pins should be bent into the most desirable position.



A Cement of choice is introduced into the canal. The Para•Post is dipped into the cement mix and permanently placed into the prepared canal.



CORE BUILD-UP

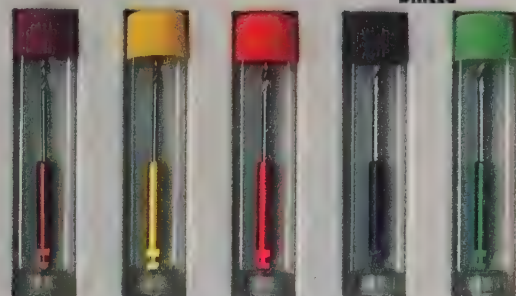
A well adapted matrix or band is used for building up an amalgam or composite core.

The core is prepared and a restoration of choice is fabricated.

THE PARA-POST SYSTEM PROVIDES A SOUND FOUNDATION FOR RESTORATIVE DENTISTRY.

Pat Nos. 4,053,983; 3,434,209; 3,850,054; 3,508,334
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DRILLS

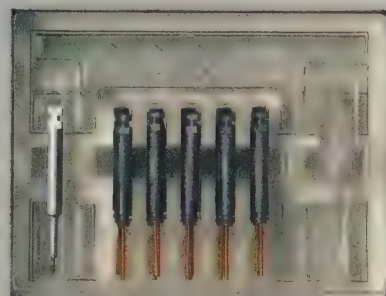


.036"/1.9mm .040"/1mm .050"/1.25mm .060"/1.5mm .070"/1.75mm
BROWN YELLOW RED BLACK GREEN
P-42-3 P-42-4 P-42-5 P-42-6 P-42-7

MINIM BENDING TOOL



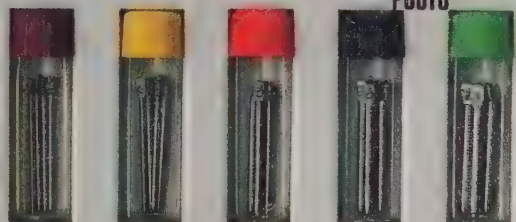
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TMS[®] LINK[™] SERIES
MINIM
DOUBLE SHEAR

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(.525mm x 2mm)

POSTS



P-44-3 P-44-4 P-44-5 P-44-6 P-44-7

POSTS AND PINS ALSO AVAILABLE IN BULK PACKAGING

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Next time you've got a gum chewer in your chair.. hand out some good advice.

Give your patients Trident Sugarless Gum.

Trident Sugarless Gum can be a worthwhile aid in your dental program for patients who chew gum. Many dentists recognize this, and recommend Trident whenever they get the opportunity.

And their patients appreciate it, not only because Trident is sugarless, so there's no risk of sugar damage to teeth, but also because they can now enjoy Trident's new improved taste.

So do your patients a service they'll really like. The next time you get asked about chewing gum, hand out some good advice...and a pack of Trident Sugarless Gum.

For dentists who don't want their patients to chew sugar when they chew gum.

THE TRIDENT PROFESSIONAL PLAN

Please send me the Trident Professional Plan I have checked below:

- ☐ Trident Sugarless Gum: two boxes each of Spearmint, Fruit, and Cinnamon, and one each of Peppermint and Bubble Gum, for \$13.50 (144 packages, regular value \$36.00).
- ☐ NEW Trident Sugarless Mints: three boxes each of Peppermint and Spearmint, and five boxes of Wintergreen, for \$13.50 (120 packages, regular value \$36.00).
- ☐ Combined Order: 144 packages of Trident Sugarless Gum and 120 packages of New Trident Sugarless Mints, for \$25.50 (regular value \$72.00).

Ontario Dentists please include 7% Provincial Sales Tax (95¢ or \$1.79).

Enclosed please find my cheque/money order (payable to Trident Professional Plan) in amount of \$ _____.

Name _____

Address _____

City _____

Province _____ Postal Code _____

Send To: Trident Professional Plan, Warner-Lambert Canada Limited, Box 2147, Toronto, Ontario, M5W 1H1.



Vol.46 No.5

Canadian
Dental Association

May
1980

Journal

de l'Association
Dentaire
Canadienne

mai
1980

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M5G 1G6

QM

CONVENTION 1980
Halifax
CONGRÈS 1980

THE XYLITOL REPORT. NUMBER ONE IN A SERIES.

PREVENTIVE DENTISTRY STARTS HERE.

It starts here, in the wood of the birch tree, and in the hardwood chips and shavings from the furniture and plywood industries. These woody raw materials are all rich in xylan, a natural substance that is purified to produce a unique sugar alternative called Xylitol.

Xylitol looks like sugar. And tastes like sugar. And it has the same nutritive and caloric values as sugar. But, more important, extensive clinical, biochemical and microbiological studies have proven that Xylitol is a non-cariogenic sweetener.

Xylitol is an excellent alternative to caries-causing sucrose. It is not used by most oral bacteria to form the acid that deteriorates tooth enamel. In fact, Xylitol abolishes sucrose-caused acidity and actually raises the pH levels in the mouth after sugar has been consumed. It also stimulates saliva flow, which helps to rinse away sugar residues and neutralize the acid which has been formed. To substantially reduce the incidence of dental caries.

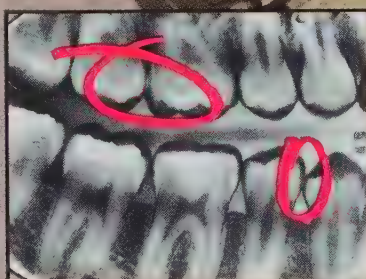
Naturally, regular brushing, regular check-ups and treat-

ment and regular use of dental floss will continue to be important factors in the practice of preventive



dentistry. But now the simple addition of Xylitol-sweetened sugarless gum to a regular diet can further contribute to your patients' oral health.

For further information, write Xylitol Information Centre, P.O. Box 490, Station A, Scarborough, Ontario M1K 5C3.



XYLITOL

ANOTHER
CONSIDERATION IN
GOOD ORAL HYGIENE!

AUDITORS' REPORT

To the Members of the Canadian Dental Association:

The following are summary financial statements for the Canadian Dental Association for the year ended December 31, 1979.

The Association's audited financial statements were presented by Touche Ross and Company at the March, 1980 Interim Board of Governors Meeting.

The complete audited financial statements are available on request from the Canadian Dental Association.

Ottawa, Ontario

January 25, 1980

Touche Ross & Co.

CANADIAN DENTAL ASSOCIATION (Incorporated under Part II of the Canada Corporations Act)

BALANCE SHEET AS AT DECEMBER 31, 1979

ASSETS

1979 1978

Current Assets		
Cash	\$ 44,410	\$ 15,426
Guaranteed investment certificates	—	200,000
Accounts receivable	75,582	80,581
Due from Trust Fund		5,000
Prepaid expenses	25,670	11,664
Inventory	18,613	—
	<u>164,275</u>	<u>312,671</u>
Fixed assets (net)		
Land	82,915	82,915
Building	1,242,123	1,272,971
Furniture & equipment	48,578	56,206
Leasehold improvements	10,804	—
	<u>1,384,420</u>	<u>1,412,092</u>
	<u>\$1,548,695</u>	<u>\$1,724,763</u>

LIABILITIES & SURPLUS

Current liabilities		
Accounts payable & accrued liabilities	\$ 105,377	\$ 266,657
Deferred revenue	357,410	75,114
Due to Library Trust Fund	5,207	—
Current portion of mortgage payable	6,618	7,157
	<u>474,612</u>	<u>348,928</u>
Long term debt		
Mortgage payable	459,355	467,067
	<u>614,728</u>	<u>908,768</u>
Surplus	<u>\$1,548,695</u>	<u>\$1,724,763</u>

STATEMENT OF REVENUE & EXPENSE & SURPLUS FOR THE YEAR ENDED DECEMBER 31, 1979

1979 1978

Revenue		
Fees	\$ 929,207	\$ 887,167
Grants	23,524	20,806
Advertising & publications	229,091	196,665
Interest	25,084	39,035
Rental income	87,898	58,213
Other income	11,111	21,404
	<u>1,305,915</u>	<u>1,223,290</u>
Expense		
Honoraria & per diem	156,339	164,553
Salaries & benefits	393,767	349,250
General & administration	264,364	295,937
Conference	15,300	14,640
Journal & other publications	308,580	233,205
Travel & meetings	218,312	228,467
Property management	172,166	149,064
Dental Health Month	10,419	7,636
Surveys — accreditation	31,048	31,554
Dental Aptitude Program	29,660	29,083
	<u>1,599,955</u>	<u>1,503,389</u>
Excess of expense over revenue for the year	294,040	280,099
Surplus, beginning of year	908,768	1,188,867
Surplus, end of year*	<u>\$ 614,728</u>	<u>\$ 908,768</u>

*The surplus of \$614,728 does not represent a cash position. It is the equity of \$925,065 in the CDA Headquarters building less an accumulated working capital deficit of \$310,337.

RAPPORT DES VÉRIFICATEURS

Aux membres de l'Association dentaire canadienne:

Voici un sommaire des états financiers de l'Association dentaire canadienne pour l'année se terminant le 31 décembre 1979.

Les états financiers de l'Association ont été vérifiés et présentés par la firme Touche Ross and Company à l'assemblée intérimaire du Conseil d'administration, en mars 1980.

Pour obtenir une copie du bilan complet, il suffit d'en faire la demande à l'Association dentaire canadienne.

Ottawa, Ontario
le 25 janvier 1980

Touche Ross & Co.

ASSOCIATION DENTAIRE CANADIENNE (Juridiquement constituée en vertu de la Loi sur les corporations canadiennes, IIe partie)

BILAN AU 31 DÉCEMBRE 1980

ACTIF

	1979	1978
Actif à court terme		
Encaisse	\$ 44,410	\$ 15,426
Certificats de placement garantis	—	200,000
Débiteurs	75,582	80,581
Somme à recevoir du fonds de fiducie	—	5,000
Frais payés d'avance	25,670	11,664
Stocks	18,613	—
	<u>164,275</u>	<u>312,671</u>
Immobilisations (valeur nette)		
Terrain	82,915	82,915
Bâtiments	1,242,123	1,272,971
Matériel et équipement	48,578	56,206
Améliorations locatives	10,804	—
	<u>1,384,420</u>	<u>1,412,092</u>
	<u>\$1,548,695</u>	<u>\$1,724,763</u>

PASSIF ET SURPLUS

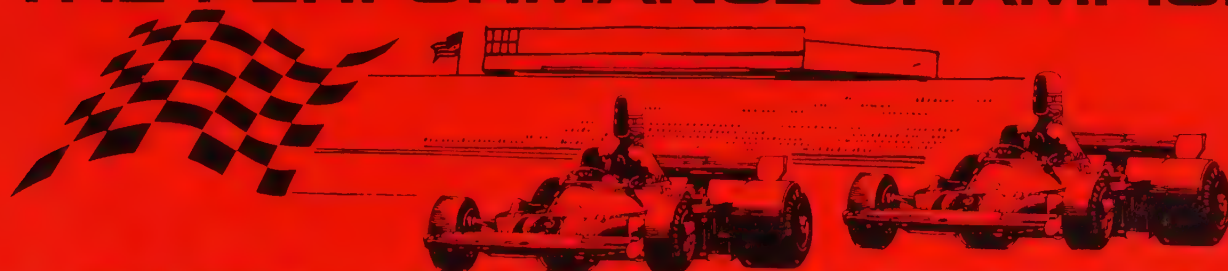
Passif à court terme		
Créanciers et passifs courus	\$ 105,377	\$ 266,657
Revenus reportés	357,410	75,114
Cotisation due au fonds fiduciaire de la bibliothèque	5,207	—
Tranche de la date à long terme échéant à moins d'un an	<u>6,618</u>	<u>7,157</u>
	<u>474,612</u>	<u>348,928</u>
Dette à long terme		
À payer	<u>459,355</u>	<u>467,067</u>
Surplus	<u>614,728</u>	<u>908,768</u>
	<u>\$1,548,695</u>	<u>\$1,724,763</u>

ÉTAT DES REVENUS ET DÉPENSES ET DU SURPLUS POUR L'EXERCICE SE TERMINANT LE 31 DÉCEMBRE 1979

	1979	1978
Revenus		
Cotisation	\$ 929,207	\$ 887,167
Subvention	23,524	20,806
Publicité et publications	229,091	196,665
Intérêts	25,084	39,035
Loyer	87,898	58,213
Autres revenus	<u>11,111</u>	<u>21,404</u>
	<u>1,305,915</u>	<u>1,223,290</u>
Dépenses		
Honoraria et per diem	156,339	164,553
Salaires et bénéfices sociaux	393,767	349,250
Frais d'administration	264,364	295,937
Conférences	15,300	14,640
Journal et autres publications	308,580	233,205
Frais de déplacements et d'assemblées	218,312	228,467
Entretien bâtiment	172,166	149,064
Mois de la santé dentaire	10,419	7,636
Enquêtes — accréditation	31,048	31,554
Programme d'aptitudes dentaires	<u>29,660</u>	<u>29,083</u>
	<u>1,599,955</u>	<u>1,503,389</u>
Excédent des dépenses sur les revenus de l'exercice	294,040	280,099
Surplus au début de l'exercice	<u>908,768</u>	<u>1,188,867</u>
Surplus à la fin de l'exercice*	<u>\$ 614,728</u>	<u>\$ 908,768</u>

*Le surplus de \$614,728 ne représente pas l'encaisse disponible. C'est la différence qui reste des \$925,065 dont disposait le siège social de l'ADC une fois qu'on y a soustrait le montant accumulé du fonds du roulement négatif soit \$310,337.

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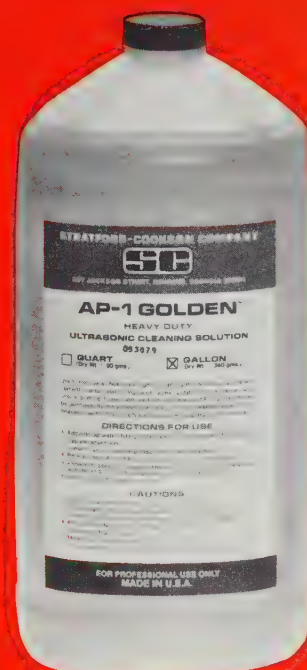
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Dentaire
Canadiennemai
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Auditors' Report

- 277 A summary financial report is presented for the information of CDA members. A full financial report is available on request.

- 296 **Can you identify this victim?**
The R.C.M.P. is asking for help in identifying a body found in the Edmonton, Alberta area.

- 299 **Convention 1980**
Halifax, Nova Scotia is the place. July 13 to 16 is the date. For a full report on the Scientific and Social programs consult your Journal. This month, details of the Clinical Program are outlined and some of the speakers are introduced. There's also information on activities for spouses, the President's Ball and a gala Lobster Party.

Editorial

- 285 **Post graduate research programs — are they important?**
Yes, says Dr. Guy Maranda, past president of the Canadian Society of Oral and Maxillo-facial Surgery.

Letters

- 288 **CDA President supports CDHA**
Dr. Clyde Covit has written in support of the CDHA's argument with the Unemployment Insurance Commission

Book Reviews

- 306 **Dental Sedation and Anaesthesia**
Dr. David Donaldson of the University of British Columbia recommends this text to both dentists and dental students.

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- 293 **What's what in the Manual**
Want to know what you'll find in the Canadian Dental Association Prepaid Dental Plan Manual? Everything is listed.

- 294 **Update on QDSA**
Dr. Claude Chicoine, QDSA president, presents an update on negotiations in the Province of Quebec.

- 294 **Provincial News**
News from Newfoundland, Alberta and British Columbia.

- 295 **Children's Hospital receives CDA Accreditation**
Dr. David Kenny, Chief of Dentistry, Children's Hospital of Eastern Ontario, reports on the progress of the Dental Service provided for more than 500,000 children in Western Quebec and Eastern Ontario.

Scientific

- 307 **Effect on the mandible of ligation of the external carotid artery and destruction of the inferior alveolar artery —**
Dufour and Jonck

- 314 **Ameloblastic fibro-odontoma: Case report —**
Curran, Owen and Lanoway

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Published monthly by the Canadian Dental Association at 1815 Alta Vista Drive, Ottawa, Ont. K1G3Y6
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Notice of change of address should be received before the 10th of the month, to become effective the following month.

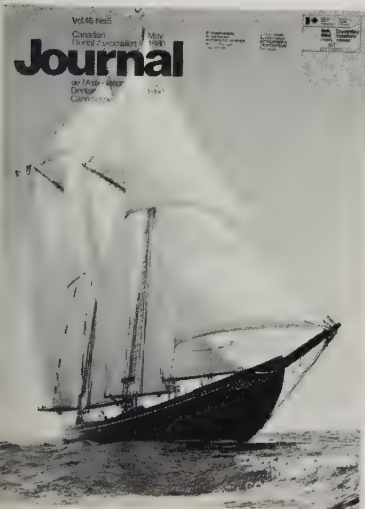
Subscriptions: North American subscribers — \$28 (Canadian funds) per year; all other countries \$30 (Canadian funds). No discount for booksellers or agencies.

Subscriptions are payable to January 1. New subscribers should not remit until billed.

U.S. representatives: Medical Media Wm. McCausland, Ed. Goedeke, Box 101, NJ 08071. Phone: 609-589-5454.

All statements of opinion and supposed fact are published on the authority of the author who submits them and do not necessarily express the views of the Canadian Dental Association, unless such statements or opinions have been adopted by the Association.

ISSN 0709-8936



Nova Scotia's floating ambassador, Bluenose II

Journal

de l'Association
Dentaire
Canadiennemai
1980

Le Rapport des vérificateurs

278 À l'intention des membres de l'ADC, le Journal présente un sommaire des états financiers de l'Association. Le rapport complet est disponible sur demande.

Éditorial

286 **Les programmes de recherche au niveau supérieur — sont-ils importants?**
Oui, de répondre le Dr Guy Maranda, ancien président de la Société canadienne des spécialistes en chirurgie buccale et maxillo-faciale.

Lettres

288 **Le président de l'ADC appuie l'ACHD.** L'ACHD conteste la nouvelle législation sur l'assurance-chômage parce qu'elle est discriminatoire pour les hygiénistes dentaires. Le Dr Clyde Covit a écrit au gouvernement pour appuyer leur requête.

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294 **Nouvelles des Provinces**

297 **Presque 5 millions de Canadiens sont assurés...**
Selon l'enquête annuelle de la CAASI, l'assurance protège 4,969,641 personnes depuis le 1er janvier 1980.

298 **Manuel des régimes d'assurance dentaire**
Le Journal vous offre un aperçu du contenu de ce nouveau manuel de l'ADC en reproduisant la table des matières.

298 **FDI — 1980**

298 **Nouvelles: Manitoba**

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La direction du Journal ne partage pas nécessairement les opinions qu'expriment ses collaborateurs à moins que l'Association Dentaire Canadienne ne les ait adoptées officiellement.

ISSN 0709-8936

302 Congrès 1980

L'Association dentaire canadienne vous donne rendez-vous à Halifax, en Nouvelle-Écosse, du 13 au 16 juillet. Consultez le Journal pour vous renseigner sur le programme scientifique et sur les activités sociales. Ce mois-ci, vous trouverez le programme clinique et vous connaîtrez quelques-uns des conférenciers. De plus, il est question du programme des conjoints, du bal du président et du dîner de homard.

303 La Conférence "Grieve Memorial"

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305 **Le Dr Denis Forest, chef de la section de radiologie à la Faculté de médecine dentaire de l'Université de Montréal, débat le pour et le contre au sujet du nouvel "Atlas radiographique d'anatomie dentaire."**

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317 **Syndrome de Gorlin — Forget**

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But dentistry was changing; and if you were serious about your work you were beginning to recognize the merits of preventive dentistry...which meant teaching the public that dentistry was more than "pulling the tooth that hurts". It was about this time that the Colgate company introduced Colgate toothpaste.

As people learned that keeping teeth healthy required day-to-day care, they learned to care for them with Colgate.



By the turn of the century most dentists were no longer common tradesmen, but educated professionals; and the Canadian Dental Association was founded so they could share their skill, their knowledge and their concern for the integrity of the profession. Although more and more toothpastes were now being introduced, Colgate's reputation as an effective dentifrice was already well-established. More and more dentists were recommending Colgate to their patients.



As the century progressed, many biological and technical advances were made in the field of dentistry, one of the most significant of which was the increasing use of fluoride to reduce the incidence of cavities. The first fluorides to be used by dentists were simple in composition: sodium fluoride and stannous fluoride. But the Colgate company was developing its own improved fluoride, MFP (sodium monofluorophosphate). Research showed that this fluoride reacts with the tooth enamel to form fluorapatite*, which makes the tooth more resistant to decay. Tests also showed that staining of teeth, which can be a problem with stannous fluoride, isn't a problem with MFP. Reformulated Colgate with MFP was so effective that it was one of the first toothpastes to receive official recognition from the Canadian Dental Association†. And Colgate** with MFP is still one of the most effective toothpastes in the fight against cavities today.



*Ericsson, Y., The mechanism of the monofluorophosphate action on hydroxy apatite and dental enamel, Acta Odont, Scand., 21, 341-358 (1963).

† Colgate Toothpaste contains sodium monofluorophosphate, which is, in our opinion, an effective decay preventive agent, and is of significant value when used in a conscientiously applied program of oral hygiene and regular professional care.

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ORAL SURGERY RESEARCH BASE

There is a distinct lack of dental research training in resident programs in oral and maxillo-facial surgery — even though the integration of a strong research component into the residency years would without a doubt, benefit the profession of dentistry as a whole.

In the first place, by introducing research studies at this level, graduate students of oral surgery will gain a better understanding of the application of research methods and the interpretation of scientific literature. Given this initial exposure, it's likely many will consider further work in the research field.

But although some graduate programs attempt to help students build a firm academic and clinical research base, most lack top-level funding and few research facilities are adequately developed. There is little motivation to interest students in research and, as if to compound the problem, research advisers are scarce. Neither is there much emphasis on research at most universities at the graduate level — even at those recognized and approved by the Canadian Dental Association — a situation dangerous, not only for the initial development of students, but also for the profession of dentistry in the long run.

With the current status quo in the field of research generally, oral surgeons must work together to encourage the development of research programs that will benefit their specialty group.

In the end, the research dilemma is a twin-edged sword — little research is conducted because few oral surgeons have the background necessary to develop sound programs or to become advisers, and this, in turn, is because there is little incentive, both in terms of available funds and facilities, to draw qualified and committed oral surgeons into research . . .

And this situation will not change until a stronger emphasis is placed on research programs for graduates. Full technical and financial support must be made available to everyone who has the ability and desire to become a 'specialist' in this discipline. We may even see the day when it will be possible for the right person to carry on a full research program in oral surgery and at the same time act as an adviser for novices in the research field.

Everything possible must be done to see that research objectives are integrated into graduate/post graduate education. The results can only be positive — a contribution to the general scientific knowledge of all health care professionals.

Dr. Guy Maranda,
Past president,
Canadian Society of Oral
and Maxillo-facial Surgeons.

La recherche dans les programmes d'enseignement supérieur

Quelle importance doit-on attacher à la recherche dans un programme de résidence en chirurgie buccale et maxillo-faciale? Cette question est maintes fois posée et nous croyons que les programmes de résidence en chirurgie buccale et maxillo-faciale devraient comporter un programme de recherche dans ce domaine de la dentisterie. De plus, le fait de compléter un programme de recherche, permet d'appliquer des méthodes intellectuelles précises, d'acquérir des connaissances et de pouvoir interpréter la littérature scientifique permettant ainsi un accroissement plus prononcé et un désir continu d'une telle recherche.

La révision de la littérature scientifique ainsi que les divers rapports qui émanent des programmes d'enseignement au Canada, peuvent nous laisser croire que cette philosophie d'obtention de l'expérience de recherche clinique est fort probablement déficiente.

Néanmoins, nous pouvons constater que les programmes d'enseignement supérieur tentent de mettre sur pied une base très solide dans cet aspect de la formation intellectuelle et clinique des étudiants, mais dans la plupart des programmes, nous pouvons constater qu'il existe certaines déficiences dans les fonds qui sont fournis à la recherche, ainsi qu'une carence dans les facilités physiques pouvant permettre de telles recherches.

Certes, il faut aussi considérer les facteurs de motivation et de tutorat. Nous pouvons constater que l'optique de l'enseignement de la chirurgie buccale se modifie d'année en année et que les cours de sciences de base ne se donnant presque plus au niveau des universités, mais plutôt au niveau des hôpitaux et ceci durant toute la période de formation de l'individu. Il existe, certes, beaucoup moins d'emphasis pour la recherche même à l'intérieur des programmes qui sont affiliés à une université reconnue et approuvée par l'Association Dentaire Canadienne.

Le danger de cette diminution de la recherche à l'intérieur des programmes est dangereux, tant pour la formation professionnelle et l'étudiant que pour toute la

profession. En effet, la chirurgie buccale doit continuer à progresser en tant que tel et continuer à contribuer à l'avancement intellectuel des confrères. La chirurgie buccale doit, en effet, mettre au point des nouvelles interventions, tenter de résoudre des questions difficiles tant au point de vue chirurgical qu'au point de vue physiologique et de plus, améliorer le traitement aux malades. Certes, ceci ne peut être fait sans des programmes de recherche bien structurés. Il est futile de croire que de tels travaux de recherche didactique ou clinique pourront se faire après que le résident aura reçu son certificat de spécialiste, si des bases solides de recherche n'ont pas été établies pendant sa période d'entraînement. Nous constatons donc un double dilemme: d'une part, il y a peu de recherche en chirurgie buccale parce qu'il manque des directeurs de recherche dans ce domaine et, d'autre part, il manque des directeurs de recherche parce qu'il y a peu de recherche qui se fait.

Cette situation ne pourra vraisemblablement pas être corrigée, sans qu'il y ait une emphase plus marquée vers les programmes de recherche et sans qu'on offre un support technique et financier à ceux qui ont la capacité, l'habileté ainsi que le désir de pouvoir devenir des spécialistes dans cette matière. Nous pouvons aussi envisager, que le poste de chercheur soit créé de façon à ce que les individus qui sont intéressés dans cette discipline, puissent personnellement poursuivre leur recherche, tout en servant aussi de tuteur pour ceux qui désirent poursuivre la même discipline.

Ainsi donc, ces efforts pourront permettre d'atteindre les objectifs intégrés au programme d'éducation graduée, tout en permettant une contribution à la connaissance scientifique générale pour les professionnels de la santé.

Dr Guy Maranda,
Président sortant,
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for combined Crest plus SnF₂ topicals and prophylaxis ranged from 48 percent to 71 percent.

For further information on these studies—or any of the 21 Crest clinical studies, write to Crest Professional Services, P.O. Box 355, Station "A", Toronto, Ontario M5W 1C5.

[†]Beiswanger, B.B., et al.: J. Dent. Child. 45:137, 1978.



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Letters

Motrin (ibuprofen)

Product Information

Action: Ibuprofen has demonstrated anti-inflammatory, analgesic and antipyretic activity in animal studies designed to specifically demonstrate these effects. Ibuprofen has no demonstrable glucocorticoid effect.

Following a single 200 mg dose of ibuprofen in humans, useful blood levels were demonstrable in 45 minutes and still present in six hours but at barely detectable levels. Peak levels occurred at approximately one hour after ingestion. Levels were lower when taken in conjunction with food.

Ibuprofen is rapidly metabolized and eliminated in the urine. The excretion of ibuprofen is virtually complete 24 hours after the last dose. The serum half-life of ibuprofen is 1.8 to 2 hours. There is no evidence of drug accumulation or enzyme induction.

Ibuprofen has been found to be less likely to cause gastro-intestinal bleeding in doses usually used than is acetylsalicylic acid.

Clinical trials in man have shown activity of a dose of 1200-1800 mg of ibuprofen daily to be similar to that of 3.6 grams of acetylsalicylic acid daily.

Indications and Clinical Uses: Motrin (ibuprofen) is indicated for the treatment of rheumatoid and osteoarthritis. Motrin is also indicated for the relief of mild to moderate pain, accompanied by inflammation, in conditions such as musculo-skeletal trauma and post-dental extraction. Motrin is also indicated for the relief of pain associated with dysmenorrhea.

Contraindications: Ibuprofen should not be used in patients who have previously exhibited hypersensitivity to it, or in individuals with the syndrome of nasal polyps, angioedema and bronchospastic reactivity to acetylsalicylic acid or other nonsteroidal anti-inflammatory agents. (see WARNINGS)

Ibuprofen should not be used during pregnancy, in nursing mothers or in pediatric patients because its safety under these conditions has not been established.

Warnings: Anaphylactoid reactions have occurred in patients with known A.S.A. hypersensitivity (see CONTRAINDICATIONS).

Peptic ulceration and gastrointestinal bleeding, sometimes severe, have been reported in patients receiving ibuprofen. Peptic ulceration, perforation, or severe gastrointestinal bleeding can have a fatal outcome, and although few such reports have been received with ibuprofen, a cause and effect relationship has not been established. Ibuprofen should be given under close supervision to patients with a history of upper gastrointestinal tract disease.

Precautions: Blurred and/or diminished vision, scotomata, and/or changes in colour vision have been reported. If a patient develops such complaints while receiving ibuprofen, the drug should be discontinued and the patient should have an ophthalmologic examination.

Fluid retention and edema have been reported in association with ibuprofen, therefore, the drug should be used with caution in patients with a history of cardiac decompensation or renal disease.

Ibuprofen, like other nonsteroidal anti-inflammatory agents, can inhibit platelet aggregation but the effect is quantitatively less and of shorter duration than that seen with acetylsalicylic acid. Ibuprofen has been shown to prolong bleeding time (but within the normal range) in normal subjects. Because this prolonged bleeding effect may be exaggerated in patients with underlying hemostatic defects, ibuprofen should be used with caution in persons with intrinsic coagulation defects and those on anticoagulant therapy.

Patients on ibuprofen should be cautioned to report to their physicians signs or symptoms of gastrointestinal ulceration or bleeding, blurred vision or other eye symptoms, skin rash, weight gain, or edema.

When ibuprofen is added to the treatment program of patients who have been on prolonged corticosteroid therapy, and it is decided to discontinue this therapy, the corticosteroid should be tapered slowly to avoid exacerbation of disease or adrenal insufficiency.

Aseptic meningitis has been reported in connection with ibuprofen therapy in patients with systemic lupus erythematosus. Such patients may also develop hypersensitivity reactions to ibuprofen such as fever, rash or abnormal liver function more often than those with other disorders. Caution should therefore be exercised when considering ibuprofen therapy for patients with systemic lupus erythematosus.

Drug Interactions

Coumarin-type anticoagulants - Several short-term controlled studies failed to show that ibuprofen significantly affected prothrombin times or a variety of other clotting factors when administered to individuals on coumarin-type anticoagulants. However, because bleeding has been reported when ibuprofen and other nonsteroidal anti-inflammatory agents have been administered to patients on coumarin-type anticoagulants, the physician should be cautious when administering ibuprofen to patients on anticoagulants.

A.S.A.: Animal studies show that A.S.A. given with non-steroidal anti-inflammatory agents including ibuprofen yields a net decrease in anti-inflammatory activity with lowered blood levels of the non-A.S.A. drug. Single dose bioavailability studies in normal volunteers have failed to show an effect of A.S.A. on ibuprofen blood levels. Correlative clinical studies have not been done.

Adverse Reactions: The following adverse reactions have been noted in patients treated with ibuprofen:

Note: Reactions listed below under Causal Relationship Unknown are those which occurred under circumstances where a causal relationship could not be established. However, in these rarely reported events, the possibility of a relationship to ibuprofen cannot be excluded.

Gastrointestinal: The adverse reactions most frequently seen with ibuprofen therapy involve the gastrointestinal system.

Incidence 3 to 9%: nausea, epigastric pain, heartburn
Incidence 1 to 3%: diarrhea, abdominal distress, nausea and vomiting, indigestion, constipation, abdominal cramps or pain, fullness of the gastrointestinal tract (bloating or flatulence).

Incidence less than 1%: gastric or duodenal ulcer with bleeding and/or perforation, gastrointestinal hemorrhage, melena, hepatitis, jaundice, abnormal liver function (SGOT, serum bilirubin and alkaline phosphatase).

Central Nervous System:

Incidence 3 to 9%: dizziness
Incidence 1 to 3%: headache, nervousness
Incidence less than 1%: depression, insomnia

Causal relationship unknown: paresthesias, hallucinations, dream abnormalities

Dermatologic:

Incidence 3 to 9%: rash (including maculopapular type)
Incidence 1 to 3%: pruritis
Incidence less than 1%: vesiculobullous eruptions, urticaria, erythema multiforme

Causal relationship unknown: alopecia, Stevens-Johnson syndrome.

Special Senses:

Incidence 1 to 3%: tinnitus
Incidence less than 1%: amblyopia (blurred and/or diminished vision, scotomata and/or changes in colour vision). Any patient with eye complaints during ibuprofen therapy should have an ophthalmologic examination (see PRECAUTIONS).

Causal relationship unknown: conjunctivitis, diplopia, optic neuritis.

Metabolic:

Incidence 1 to 3%: decreased appetite, edema, fluid retention. Fluid retention generally responds promptly to drug discontinuation (see PRECAUTIONS)

Hematologic:

Incidence less than 1%: leukopenia and decreases in hemoglobin and hematocrit

Causal relationship unknown: hemolytic anemia, thrombocytopenia, granulocytopenia, bleeding episodes (e.g. purpura, epistaxis, hematuria, menorrhagia).

Cardiovascular:

Incidence less than 1%: congestive heart failure in patients with marginal cardiac function, elevated blood pressure

Causal relationship unknown: arrhythmias (sinus tachycardia, sinus bradycardia, palpitations).

Allergic:

Incidence less than 1%: anaphylaxis (see CONTRAINDICATIONS).

Causal relationship unknown: fever, serum sickness, lupus erythematosus syndrome

Endocrine:

Causal relationship unknown: gynecomastia, hypoglycemic reaction.

Renal:

Causal relationship unknown: decreased creatinine clearance, polyuria, azotemia

Symptoms and Treatment of Overdosage: A nineteen month old child weighing 12 kg ingested from 2800 to 4000 mg and presented with apnea, cyanosis and responded only to painful stimuli. Oxygen and parenteral fluids were given and at 12 hours she appeared completely recovered. Two other children (10 kg each) ingested 1200 mg of ibuprofen each and there were no signs of acute intoxication or late sequelae. A 19 year old male who had ingested 8000 mg of ibuprofen reported dizziness, and nystagmus was noted. He recovered with no reported sequelae after parenteral hydration and three days' bed rest.

In cases of acute overdosage, the stomach should be emptied by vomiting or lavage, though little drug will likely be recovered if more than an hour has elapsed since ingestion. Because the drug is acidic and is excreted in the urine, it is theoretically beneficial to administer alkali and induce diuresis.

Dosage and Administration: **Rheumatoid arthritis and osteoarthritis:** The initial daily dosage in adults is 1200 mg divided into 3 or 4 equal doses. Depending on the therapeutic response, the dose may be adjusted downward or upward. The daily dosage should not exceed 2400 mg.

Maintenance therapy, once maximum response is obtained, will range from 800 to 1200 mg per day.

Mild to moderate pain associated with inflammation, dysmenorrhea: 400 mg repeated as required every 4 to 6 hours. The daily dosage should not exceed 2400 mg.

Children: Due to the lack of clinical experience, ibuprofen is not indicated for use in children under 12 years of age.

Supplied: 200 mg (yellow), 300 mg (white), 400 mg (orange) sugar-coated tablets and 600 mg (peach) film-coated tablets in bottles of 100 and 1000.

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Support CDHA

The following is a letter from Dr. Clyde Covit, president of the Canadian Dental Association, addressed to the Honorable Lloyd Axworthy, minister, Employment and Immigration, concerning Unemployment Insurance Commission regulations as they affect dental hygienists (CDA Journal, April, 1980).

The Canadian Dental Association would like to bring to your attention its support for the policy statement forwarded to your office by the Canadian Dental Hygienists' Association.

It is our understanding that your Department has agreed in principle to modify the legislation to allow contributions to be made and benefits to be drawn from every employment source when the total hours worked from such sources exceeds 20 hours per week.

We respectfully suggest that the appropriate modification be considered at the earliest possible time because of the discriminatory implications which possibly exist.

Clyde Covit, DDS,
President,
Canadian Dental Association.

He shoots, he...

After all the effort spent by our profession advocating facial protection in hockey, I find your February cover ironic. The puck is aimed right at the goaltender's unprotected mouth.

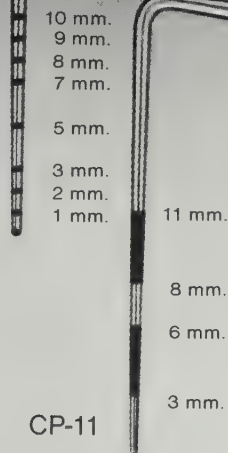
Mary I. Kudrac, DDS
Toronto, Ontario

Le Journal de l'Association Dentaire Canadienne est heureux d'offrir cet espace aux lecteurs désireux d'envoyer des "Lettres à la rédaction". Toutes les lettres doivent être signées et la rédactrice en chef se réserve le droit de les raccourcir si la manque d'espace l'impose.

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Before



After

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Before



After

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Before



After

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Before

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What makes your office tick?



There is only so much you can do to make your practice tick the way you want it to. Oh, you can check your book beforehand to see that appointments are kept, you can speed up your billing, you can surround yourself with the right kind of support staff. You can organize, or re-organize your workload – and there are probably other things you can do as well.

But eventually, maybe not today, but certainly soon, you're going to have to rely on other people to deliver the goods for you. That's why we want you and your staff to talk to the Ash Temple rep. You'll find he's been in and out of dental offices for a long time. He knows what makes a good office a better office. A good dentist, an efficient dentist. You'll find he'll be delighted to pass on to you some of the things he has seen and knows. Things that can certainly save time and probably a little aggravation.

Things like, how much product you should have on hand for your practice so that you never run out. What equipment you should trade in, or new equipment you should buy. We think you will also find that he's pretty knowledgeable about new products coming on the market, a new technology, or a new technique in dentistry. Talk to him.

You see, our reps are not just suppliers to the dental industry – they're in the industry.

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What's what and where in Manual

The Canadian Dental Association Prepaid Dental Plan Manual has been distributed nationally to the dental profession directly from Association headquarters, with the exception of dentists in British Columbia, Ontario and Quebec, who may obtain copies of the Manual from their corporate bodies.

"CDA Policies on Prepaid Dental Plans and Guide on How to Complete Dental Claim Forms" contains all principles, policies, guidelines, sample letters and approved standard dental forms required to deal with third party carriers.

The table of Contents lists specific areas identified in the Manual:

- Statement of Principles

- Glossary of Terms

- CDA Policies

- Specific Instructions for Completion of Sheet and Computer Card

- Approved Standard Dental Claim Forms

 - General Criteria

 - The Treatment Plan

 - The Claim Form

 - Additional Procedures

- CDA Approved Forms

 - Standard Dental Treatment Plan Form

 - Standard Dental Claim Form

 - Computer Card Claim Form

 - Supplementary Information Form

- Expertise Statement

 - Guidelines

 - Covering Letter

 - Expertise Statement

- Sample Letters

 - Guidelines for Dental Consultant Activity

- Guidelines on School Dental

 - Accident Insurance

- CDA Recommended Minimum

 - Standards for Dental Prepayment Plans

CDA Resumé of Procedure for Claims Assistance Services CDA Recommended Prepaid Dental Plan

In a covering letter to the profession, Dr. Clyde Covit, president of the Canadian Dental Association emphasized that where Provincial Guidelines and Policies differ from those issued from CDA, the provinces' policies "prevail over and above" those contained in the CDA Manual.

"It will become quite apparent that if we follow the principles enunciated in this Manual, we will be able to preserve the values inherent in the traditional dentist-patient relationship," said Dr. Covit.

CAASI coverage

More than four million Canadians are now covered under Canadian Accident and Sickness Insurers (CAASI) member plans. According to the CAASI annual survey, coverage was extended to 4,969,641 people as of January 1, 1980, an increase of 45.5 per cent over the previous year.

In a recent information mailing to members of the Canadian Dental Association Executive Council, Hubert Drouin, CDA executive director, pointed out that this figure does not include coverage figures of several organizations, outside CAASI and operating under different legislative requirements, which also provide dental benefits in this country.

Forty-one CAASI members reporting to the survey offer group dental plans covering basic dental services such as examinations, x rays, scaling and cleaning teeth, fillings, extractions and treatment of gum disease. Many also include

major restorative services, crowns, bridges, dentures and orthodontic treatment.

Thirty-four of the member companies also provide a limited dental expense benefit as part of their coverage under extended health plans, student and sports accident and other accident policies. The companies reported that close to 3,387,000 people are eligible for this benefit under extended health care plans and more than one million students are protected through student accident policies.

The total number of group dental contracts in force as of January 1, 1980 was 14,941, an increase of 4,963 over the previous year.

Societies/ Sociétés

Canadian Academy of Endodontics

... 16th Annual Meeting is scheduled to take place July 12 and 13 at the Chateau Halifax in Halifax, Nova Scotia. The program will feature Dr. Dennis Smith from the University of Toronto discussing dental materials and endodontics. A half-day clinical session will feature Dr. Cyril Gaum of Boston, Massachusetts who will discuss diagnostic perplexities. Further information on the complete program is available from Dr. Tom Larder, 5991 Spring Garden Road, Halifax, Nova Scotia, B3H 1Y6.

Association of Periodontists of Quebec

... executive members include Dr. M. Stutman, Montreal, president; Dr. S. Galperin, Montreal, vice president; Dr. J.P. Masson, Montreal, secretary; and Dr. E. Shore, Pointe-Claire, treasurer.

Canadian Society of Public Health Dentists

... Dr. D. Banting, Faculty of Dentistry, University of Western Ontario, is the editor of the Society's recently released 'Newsletter'. The Newsletter will be published twice a year. Dr. Banting is looking for news material from all 108 members of the Society.

Update on QDSA

In February, 1979, the Journal of the Canadian Dental Association published an article by CDA president, Dr. Clyde Covit, concerning the Quebec Dental Surgeons' Association negotiations with the province of Quebec. At that time, Dr. Covit outlined the background of on-going negotiations between the two bodies and noted that the existing agreement was due to expire at the end of October, 1979. Anticipating that deadline, QDSA filed up-to-date proposals with the Quebec Ministry of Social Affairs on October 15, 1979.

Dr. Claude Chicoine, QDSA president and executive director recently prepared an update of the situation for the Journal.

As a result of a tentative understanding between the QDSA and the Federation of General Practitioners of Quebec, these two health bodies are currently planning to negotiate jointly on important amendments to the Health Insurance Act chapter on compensation and arbitration. Changes envisioned would amend the current agreement as follows: 1. The concept of an institution would be extended to allow the monetary clauses to apply to dentists working in extensions of a public institution in a facility maintained by a municipal or school corporation or by a religious institution; 2. Not only the Minister, but also any institution would be unable to have an agreement or a contract with dental hygienists allowing the latter to render irreversible dental services; 3. The Geographical Distribution Committee's terms of reference would be more closely defined in order to avoid any quantitative criteria; 4. Provisions relating to compensation and arbitration would be amended to ensure that no fees could be with-

held before the dentist involved had had an opportunity to be heard by the arbitration board. The efficiency of arbitration process would be furthermore improved by the creation of a permanent arbitration board; 5. A Standing Liaison Committee would be set up between the Minister and the Association for the purposes of implementing administrative means of interpreting and applying the agreement, which would be binding on the QHIB.

Obituaries/ Nécrologies

COX, R.E., Graduated University of Toronto, 1935.

LITTLE, James E., died October 3, 1979. Graduated University of Toronto, 1935.

STEWART, J.B.G., graduated 1930. Died November 8, 1979.

MACGREGOR, Donald G., graduated University of Alberta Faculty of Dentistry, 1941. Died December 30, 1979. Served in the Royal Canadian Dental Corps both in Canada and overseas. Practised in Grande Prairie, Alberta until 1953 before joining the University of Alberta Faculty of Dentistry. After retirement, Professor MacGregor spent several sessions as supervisor of the Mobile Dental Clinic in northern Alberta. He served as president of the Canadian Legion, Grande Prairie branch and as president of the Rotary Club and Masonic Lodge.

GENEST, Louis-Philippe, décédé 18 janvier, 1980 à St-Romuald d'Etchemin, Québec.

SMOCKUM, George Stewart, died January 16, 1980. Graduated University of Toronto, 1915. Practised dentistry in Alliston, Ontario for 40 years.

Provinces

Newfoundland . . . The Newfoundland Dental Association has requested that its members document any sub-standard work performed by illegal practitioners, particularly all cases of removable partial dentures. The documentation is needed, said the Association's Newsletter, to demonstrate to government the need to prevent untrained personnel from practising dentistry in the province.

Newfoundland dentists have been reminded by their Association that it is not their responsibility to define how teeth are injured. It has come to the attention of the Association Executive that insurance companies frequently ask practitioners to support a patient's claim of accidental injury to teeth. The dentist's responsibility ends at recording information on technical services provided.

Alberta . . . The Edmonton Periodontal Continuing Education Society was recently established by a group of dentists in Alberta. Membership in the study club, which has been incorporated under the Societies Act of the Province of Alberta, is open to any dentist in good standing with the Alberta Dental Association. Dues are \$100. Guest lectures, seminars and participation clinics are planned. Dr. P.D. Schuller, 2088 Dentistry Building University of Alberta, Edmonton, T6G 2N8, is president of the Society and Dr. L. Skuba, 205, 13717 — 70 Street, Edmonton, T5C 3E6, is secretary-treasurer.

British Columbia . . . Draft 22 of the proposed revisions to the Dentistry Act will be referred to the B.C. College Annual Meeting later this month unless major disagreements have been registered. Dr. Doug McDougall of Victoria chaired the committee that drafted the revisions. Representatives from all component dental societies were on the committee.

Children's Hospital Receives CDA Accreditation

Less than three years after its formation, the Division of Dentistry of the Children's Hospital of Eastern Ontario has achieved 'approved' status from the Council on Hospital Services of the Canadian Dental Association.

THE HOSPITAL

The Children's Hospital of Eastern Ontario was opened May 17, 1974. This 267 bed pediatric hospital is physically linked to a Crippled Children's Treatment Centre. Together they serve a population of approximately 500,000 children in the National Capital region as well as an extensive referral area covering Western Quebec and Eastern Ontario. This tertiary care facility is affiliated with the University of Ottawa, Faculty of Health Sciences. By 1982 the Children's Hospital will be physically linked to the University of Ottawa Health Sciences Building, now under construction, and the Ottawa Health Sciences Center General Hospital due to open in 1980.

THE DIVISION OF DENTISTRY

STAFF:

Dental staff of the Division includes a full-time chief of Dentistry and five active staff general dentists who practise one day a week in the hospital. Consulting staff members are three oral surgeons, one orthodontist, one endodontist and one periodontist. In addition, four general dentists serve on courtesy staff. Division staff includes a secretary, receptionist, hygienist and two dental assistants.

SERVICE:

Excellent cooperation from the Departments of Pediatrics and Surgery led to the rapid assimilation of dental services into the activities of the hospital.

Division of Dentistry input to the Cleft Palate Team of the Children's Hospital ranges from infant orthopedics and feeding assistance, through orthodontic services, to placement of prostheses in completed cases. Comprehensive orthodontic services are provided for cleft palate patients only. The Team meets monthly with both an orthodontist and pedodontist in attendance.

Specialized dental care for the retarded at Pavillon du Parc, Aylmer, Quebec and the Rideau Regional Centre, Smith Falls, Ontario is provided by the Children's Hospital. General anaesthetic facilities for restorative dental procedures and consultant services compliment the dental services provided at these institutions.

Emergency first-aid service is provided on a full-time basis. Staff dentists rotate weekly on-call and have treated over 300 children during the past year. Treatment for fractures of the teeth and jaws, oral infections and dental pain is routinely provided. Cases are transferred directly from the Hospital's Emergency Department or from private practices. Following initial treatment, the children are referred to their family dentist or to the Ottawa Dental Society referral service if they do not have a dentist.

Out-patient services are provided for handicapped and chronically ill youngsters as well as for special dental cases referred by dentists in private practice. A recent survey of the active patient files revealed that 79 per cent of children live in Ontario and 21 per cent reside in Quebec. Over 2,500 out-patient visits were recorded over the past year.

The two most common diagnoses (20 per cent each) are mental retardation and cleft lip and palate.

Management of oral electrical burns and dental treatment of children suspected of having malignant hyperthermia are two areas of special attention for the Division of Dentistry. Most referrals of electri-

cal burns come from plastic surgeons in the Ottawa area. Several families with a history of malignant hyperthermia live in the Ottawa Valley. Children of these families are managed in conjunction with the Department of Anaesthesia. A large number of treatments have been performed for children with both of these conditions and form the basis of two clinical publications currently in progress.

EDUCATION:

The staff of the Division of Dentistry is involved in many of the in-house training programs offered at the Children's Hospital. Lectures are regularly given to student nurses, graduate nurse in-service sessions, dietetic interns, pharmacy students, medical students and pediatric residents. As well, dental assistants from Algonquin College gain work experience in the clinic and Dr. David Kenny lectures student hygienists in pedodontics at their college.

Dr. Kenny and Dr. Norman Levine, chairman of Pedodontics at the University of Toronto, have organized a program to provide post-graduate pedodontic students with one week of intensive training at Children's Hospital. These sessions provide the students with the opportunity to treat handicapped patients in the clinic and operating room as well as to attend a number of seminars and informal talks. This program has been underway for three years.

RESEARCH AND PUBLICATIONS:

A number of case histories and surveys are underway and the presence of the medical school on this site will undoubtedly stimulate research activity over the next five years.

The preceding article was prepared for the Journal by Dr. David J. Kenny, Chief, of Dentistry, Children's Hospital of Eastern Ontario, Ottawa. Dr. Kenny is also assistant professor, Faculty of Dentistry, University of Toronto and lecturer, Faculty of Medicine, University of Ottawa.

Plan for FDI

The 68th Annual World Dental Congress of the Fédération Dentaire Internationale (FDI) is scheduled for September 2 to 7 in Hamburg, West Germany.

The FDI scientific program includes lectures ("Mixed Dentition — a problem for the dentist"; "Pharmacological Effects of Antibiotics and Corticoides in Dental Practice"; "Dysfunction in the Masticatory System"; "Current Problems in Restorative Dentistry"), table clinics and films. Simultaneous interpretation in English, French, Spanish and possibly Japanese will be available.

During the Congress, the social program will feature visits to local

attractions and a complete city tour of Hamburg. A visit to the University Hospital Eppendorf has been scheduled for a limited number of participants. Highlights of the social program are a Gala Night in the Hamburg State Opera and the Celebration Ball.

Allan's Travel Service of Ottawa has scheduled four tours that will take travellers to such European attractions as Munich, Heidelberg, Vienna, Zurich, Strasbourg, Salzburg and Luxembourg. Flights to Hamburg via Frankfurt are arranged with Lufthansa and via Paris with Air France.

Full information on all tours can be obtained from Allan's Travel Service Ltd., 56 Sparks Street, Suite 808, Ottawa, Ontario, K1P 5A9.

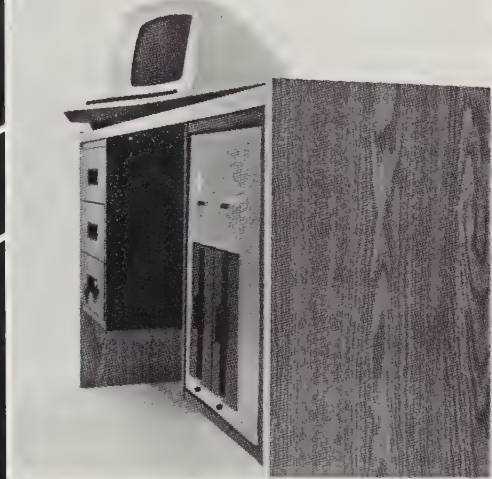
For full CDA Convention information see page 299.

Manitoba update

A report on the Manitoba Children's Dental Health Program was recently published in the Journal of the Canadian Dental Association (April, 1980). That report concluded that "statistics for the first year of operation and the enthusiasm of private practice dentists indicate the Manitoba Dental Association should have still greater involvement in the delivery and administration of the entire Children's Dental Health Program" in that province.

A note of interest further to that article is that the Manitoba Dental Association Children's Dental Health Program is currently using the MDA 1980 Fee Guide as a basis for remuneration.

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Good Mouthkeeping was the theme for the National Dental Health Month 1980 campaign as National Chairman Dr. Don Scramstad of Surrey, British Columbia lead Canadian youth to good dental hygiene. April, National Dental Health Month, was marked in all provinces across Canada.

Presque 5 millions de Canadiens sont assurés

Plus de quatre millions de Canadiens participent aux régimes d'assurance de l'Association canadienne des compagnies d'assurance-accident et maladie (CAASI). Selon l'enquête annuelle de la CAASI, l'assurance protège 4,969,641 personnes depuis le 1er janvier 1980, soit une augmentation de 45.5 pour cent par rapport à l'an dernier.

Dans une lettre circulaire qu'il faisait parvenir aux membres du Conseil exécutif de l'Association dentaire canadienne, M. Hubert Drouin, directeur général de l'ADC, faisait remarquer que ces chiffres ne tiennent pas compte de plusieurs organismes du pays qui, en dehors de la CAASI, obéissent à des règlements différents et fournissent eux aussi à leurs membres des régimes d'assurance dentaire.

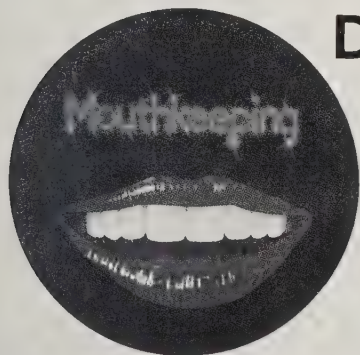
Quarante et un organismes de la CAASI qui ont fait partie de l'enquête, offrent des régimes d'assurance dentaire collectifs qui garantissent les services dentaires de base comme les

**"... l'assurance protège
4,969,641 personnes
depuis le 1er janvier ..."**

examens, les radiographies, le détartrage et le nettoyage des dents, les obturations, les extractions et les traitements pour les maladies des gencives. Plusieurs régimes couvrent également les services de restauration majeurs, les couronnes, les bridges, les dentiers et les traitements d'orthodontie.

Trente-quatre des compagnies membres offrent, en outre, une garantie limitée pour les frais dentaires. Cette garantie fait partie de la protection que donnent les régimes d'assurance-maladie accrus, les assurances-accident pour les étudiants et les sportifs et d'autres assurances-accident. Les compagnies ont déclaré que près de 3,387,000 personnes sont admissibles à ces garanties grâce aux régimes d'assurance-maladie accrus et que plus d'un million d'étudiants sont protégés par les régimes d'assurance-accident pour les étudiants.

Le nombre total des contrats d'assurance dentaire collective en vigueur depuis le 1er janvier 1980 atteignait 14,941, ce qui représente une augmentation de 4,963 contrats par rapport à l'année précédente.



DENTAL HEALTH BUTTONS & TABS

This year we have a metal Lapel Tab available as well as the ever popular button. They are used as favours by dental teams to promote dental health throughout the year and especially during April, Dental Health Month, 1980. Order now and be assured of a good supply when you need them. Allow 6 weeks for delivery.

PLEASE NOTE: Order in lots of 100 only. Thank you for your support.

A PROJECT OF The Canadian Dental Hygienists' Association
L'association Canadienne des Hygienistes Dentaires



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Amount of Cheque \$ _____

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Remittance must accompany order, payable to CANADIAN DENTAL HYGIENISTS' ASSOC.

Manuel des régimes d'assurance

L'Association dentaire canadienne a distribué son Manuel des régimes d'assurance dentaire aux membres de la profession dentaire du pays, sauf à ceux de la Colombie Britannique, de l'Ontario et du Québec qui, eux, peuvent en obtenir une copie par l'intermédiaire de leur association provinciale.

"Les Principes directeurs de l'ADC en matière de régimes d'assurance dentaire et le Guide sur la manière de remplir les formulaires de réclamation dentaire" contiennent tous les principes et toutes les directives nécessaires pour traiter avec les assureurs agissant en tiers, ainsi que des lettres types et les formulaires dentaires standard qui sont approuvés.

La table des matières énumère les différents sujets du Manuel:

- la déclaration des principes
- un glossaire
- les principes directeurs de l'ADC
- les instructions particulières pour remplir les formulaires et les cartes d'ordinateur
- les formulaires de réclamation dentaire standard et approuvés
 - les critères généraux
 - le plan de traitement
 - le formulaire de réclamation
 - diverses règles à suivre
- les formulaires approuvés par l'ADC
 - le formulaire standard du plan de traitement dentaire
 - le formulaire standard de réclamation dentaire
 - la carte d'ordinateur servant de formulaire de réclamation dentaire
 - le formulaire de demande de renseignements additionnels
- la déclaration solennelle
 - les directives
 - la lettre de présentation
 - la déclaration solennelle
- les lettres types

- les principes directeurs à l'intention des consultants dentaires
- les directives pour l'assurance contre les accidents dentaires dans les écoles
- les normes minimales recommandées par l'ADC pour les régimes d'assurance dentaire
- le résumé des démarches à suivre approuvées par l'ADC pour les services d'aide à la réclamation
- le régime d'assurance dentaire recommandé par l'ADC

Dans une lettre de présentation adressée aux membres de la profession, le Dr Clyde Covit, président de l'Association dentaire canadienne, a fait remarquer que, dans les provinces où les directives et les politiques diffèrent de celles de l'ADC, les politiques provinciales "doivent prévaloir sur et indépendamment de" celles qui sont contenues dans le Manuel de l'ADC.

"Si nous respectons les principes de ce Manuel," de dire le Dr Covit, "il est entendu que nous conserverons les valeurs attachées à la relation traditionnelle qui existe entre le dentiste et son patient."

FDI - 1980

Le programme scientifique de la Fédération Dentaire Internationale (FDI) à Hambourg, comprend des conférences ("La Denture de transition: un problème pour le dentiste"; "Les Effets pharmacologiques des antibiotiques et des corticoïdes en médecine dentaire"; "La Dysfonction dans le système masticatoire"; "Les Problèmes courants en dentisterie restaurative"), des exercices cliniques en table ronde et des projections cinématographiques. Tout sera présenté en traduction simultanée en anglais, en français, en espagnol et, peut-être, en japonais.

Pendant le Congrès, qui se tiendra du 2 au 7 septembre prochain, le programme des activités sociales comprendra des visites des principaux points d'intérêt locaux ainsi qu'une visite complète de Hambourg. Pour un nombre limité de personnes seulement, on a prévu une visite de l'hôpital de l'Université Eppendorf. Le clou du programme social sera sans doute la soirée de gala à l'Opéra de Hambourg et le Bal de célébration.

L'agence Allan's Travel a préparé quatre excursions qui conduiront les voyageurs à des villes aussi célèbres que Munich, Heidelberg, Vienne, Zurich et Strasbourg ainsi qu'au Grand Duché du Luxembourg. Pour se rendre à Hambourg, on pourra voyager avec Lufthansa, via Francfort, ou avec Air France, via Paris.

On peut obtenir des renseignements complets sur ces voyages à l'agence Allan's Travel Service Ltd., au 56, rue Sparks, suite 808, Ottawa, Ontario, K1P 5A9.

Nouvelles Manitoba

Dans son numéro d'avril, le Journal de l'Association dentaire canadienne a publié un rapport sur le programme de santé dentaire à l'intention des enfants du Manitoba. En guise de conclusion, on pouvait lire: "les statistiques de la première année et l'enthousiasme des dentistes des pratiques privées indiquent que l'Association dentaire du Manitoba devrait participer plus activement à la diffusion et à l'administration du programme complet de santé dentaire à l'intention des enfants" de cette province.

Il n'est pas sans intérêt de noter, en rapport avec cet article, que le programme de santé dentaire à l'intention des enfants de l'Association dentaire du Manitoba utilise couramment, pour déterminer les frais de service, l'indicateur d'honoraires de l'ADM pour 1980.

Convention 1980

CDA in Halifax, N.S.

The 1980 Canadian Dental Association Annual Convention will open Sunday afternoon, July 13 at the Hotel Nova Scotian with the registration of delegates. Those who have pre registered will receive a registration package at their hotels. Exhibitors' booths will be open Sunday

afternoon at the Dalhousie University Arts Centre.

Sunday evening, events get underway with the opening ceremonies, introduced by the Halifax town crier, Peter Fox, who will declare the Convention officially opened. Dinner that evening will include a selection of five fish chowders.

MONDAY

Clinical programs begin at 10 a.m. Monday and trade exhibits will be open.

The Installation Luncheon will take place at the Hotel Nova Scotian. Dr. Clyde Covit will pass the Presidential Chain of Office to Dr. Gil Utas.

After lunch, the clinical programs will continue at the Arts Centre.

Monday evening is 'fun night' with a lobster party at the new Halifax Metro Centre. There will be two lobsters per person, complete with hot melted butter, rolls and all the trimmings (an alternative menu will be available for non-lobster fans).

CDA NATIONAL CONVENTION CLINICAL PROGRAM JULY 14, 15, 16, 1980

MONDAY

Cohn 9:00-12:00 Control of Pain (Ken Bentley) (Howard Katz) (Paul Rondeau)	MacAloney 9:15-10:30 Perioral Muscle Force in Malocclusions — Its Effect on Orthodontic Diagnosis and Treatment (Aaron Posen) 10:45-12:00 Saving Teeth Can be Easy!! (Tom Larder)
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TUESDAY

Cohn 9:00-12:00 Current Concepts in Pedodontics (Ted Oldenburg)	MacAloney 9:15-10:30 The Physiologic Restoration and Electrosurgery in Restorative Dentistry (Ron Bannerman) 10:45-12:00 Update on Fixed Prosthodontics (Vern Shaffner)
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WEDNESDAY

Cohn 9:00-12:00 Dentistry for the Elderly (A.S. Franks)	MacAloney 9:00-12:00 The Correction of Dentofacial Deformities (David Precious) (Gene Jensen)
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LUNCH TWO HOURS

Cohn 2:00-5:00 Pedodontics for the General Practitioner (Ted Oldenburg)	MacAloney 2:15-3:30 Management for Difficult Restorations (Noel Andrews) 3:45-5:00 Head and Neck Examination in Search of . . . (Robert Hoar)	Cohn 2:00-5:00 Management of the Patient with Periodontal Disease in Private Practice (Esther Wilkins)	MacAloney 2:15-5:00 A Hard Look at Soft Liners Fatigue Failure of Dental Amalgam New Developments in Impression Materials and Cements (Derek Jones) (Bruce Graham) (Elliott Sutow)	2-5 S T U D E N T T A B L E C L I N I C S
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Remember Social Activities start Sunday, July 13. Associated organizations meet the preceding week. Inquire about the clinical programs for CARD, CAP, CAE, etc.

Convention 1980

TUESDAY

The clinical program continues and the exhibition floor will be open. Luncheon is courtesy of the Government of Nova Scotia at the Hotel Nova Scotian.

Tuesday evening is the President's Ball — complete with a big band sound and a gourmet meal.

WEDNESDAY

After morning clinical sessions, a buffet lunch will be served in the exhibit area at the Dalhousie University Arts Centre. Time permitting, a tour of H.M. Dockyard, the Maritime Museum and a destroyer escort will be arranged.

TRANSPORTATION

The major centres of the Convention, Dalhousie, Metro Centre and the Hotel Nova Scotian are not more than 1.5 miles apart so that walking from one activity to another is possible. Otherwise, the Convention organizers have arranged for buses

to shuttle delegates between their hotels and the Arts Centre, morning, noon and evening.

Full registration details are available at the back of this Journal.

Materials' review

A three part clinical program will be presented by Dr. Derek Jones, Dr. Bruce Graham, Dr. Elliott Sutow, Dr. E.L. Milne and Dr. L.E. Peacocke, of Dalhousie University on the second day of the Convention Scientific Program.

The first section of their Tuesday afternoon presentation, delivered by Drs. Jones, Sutow, Graham and Milne, is "A Hard Look at Soft Liners." A review of the present knowledge and behaviour of soft lining denture materials, together with research data for nine currently used brands will be presented. The

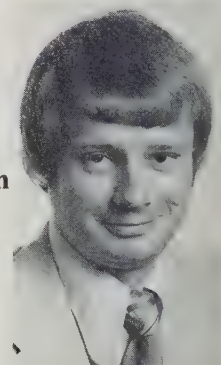
effect of functional and parafunctional forces on these materials will also be discussed.

In their second presentation, "The Fatigue Behaviour of a Dental Amalgam at two Frequencies," Drs. Sutow, Jones and Milne will look at an on-going investigation to study the response of amalgam to dynamic loading in order to elucidate the role of fatigue failure in marginal deterioration.

The third presentation deals with "New Developments in Impression Materials and Cements" with Drs.



Dr. Derek Jones



Dr. Bruce Graham



Dr. Elliott Sutow

Grieve Memorial Lecture

Dr. Aaron Posen of Toronto, Ontario will deliver this year's Grieve Memorial Lecture the first day of the Convention Scientific Program, Monday, July 14 at 9 a.m. The topic



Dr. Aaron Posen

of Dr. Posen's presentation is "Perioral Muscle Force in Malocclusions — Its Effect on Orthodontic Diagnosis and Treatment."

The Grieve Memorial Lecture is named after Dr. George Grieve, an orthodontist, who was both a practitioner of orthodontics and a teacher of undergraduate dental students.

Dr. Posen is an associate professor in orthodontics at the University of Toronto. He is a member of the Ontario Society of Orthodontists, the Canadian Society of Orthodontists, the Great Lakes Society of Orthodontists, the American Association of Orthodontists and the Mid Western Component of the Angle Society. Dr. Posen has received his FRCD (Canada) degree and is a diplomate of the American Board of Orthodontics (AB).

Jones, Sutow, Peacocke and Milne addressing Convention delegates.

The recent developments in glass ionomer luting cements will be discussed and comparative data on the direct tensile strength of these materials relative to other cements will be presented.

This three part program begins at 2:15 p.m. Tuesday and concludes at 5 p.m.

Halifax means tours, crafts, art

Sunny days, sandy beaches, vast expanses of blue water, fresh salty breezes, historic sites — that's Atlantic Canada — and here in Halifax, it's all combined with excellent shopping and dining.

The CDA Convention Ladies' Committee has prepared a 'package' to include a luncheon and fashion show at the Lord Nelson Hotel, Monday at noon, a lobster party, Monday night and a choice of bus tours on Tuesday.

The fashions for Monday's luncheon will be shown by Carolyn Stewart of 'The Teazer' in Mahone Bay. She offers a discount of 15 per cent to everyone attending.

BUS TOURS

Tour A — to the picturesque Annapolis Valley, with visits to Cape Blomidon (amethysts found here), historic Prescott House at Starr's Point and a nearby gift shop. We stop for lunch at the 'Old Orchard Inn' midway between Wolfville and Kentville.

Tour B — to the South Shore towns of Chester and Mahone Bay with a chance to visit their unique antique and gift shops and lunch at 'The Captain's House' in Chester.

But hurry! This 'package' is only available to the first 250 who register. Each tour will accommodate 125. Please state your first choice.

ALTERNATIVES

For those who are not interested in the above program, or who have their families along, there are many daytime alternatives. Although these are not specific programs organized by our Committee, full information is available and we will be delighted to help you make arrangements or point you in the right direction. We will have tickets available on Sun-

day night for one of the "Haligonian III" tours of the harbour and North West Arm on Monday morning. This would be an ideal family outing.

Many other tours, such as the City Tour, a sail on the "Bluenose II" or, out of town to Peggy's Cove, are available, but must be arranged on your own. How about a walking tour of Old Halifax?

If you want to be on your own but still want to attend the lobster party, tickets will be available.

ART AND CRAFTS EXHIBIT AND SALE

Sunday, July 13
Hotel Nova Scotian

Art — Arrangements have been finalized with Debbie Morrissey, director of Gallery 1667 — Historic Properties — for an exhibition and sale of works by a number of well-known artists including Geoffrey Armstrong, Ron Bolt, Douglas Elliott, Nancy Fortunato and Alan Wylie.

Crafts — An exhibit and sale of Nova Scotia crafts is planned. Inquire at the Registration Desk for information on the Craft Boutique. Exquisite handmade quilts, woven items and jewelry, are a few of the crafts to be exhibited.

HOSPITALITY SUITE

Our Hospitality Suite will be an exciting place to "greet, meet or have a cuppa," and will be equipped with emergency supplies and a list of baby sitters. Every day there will be a gift draw for visitors to the Hospitality Suite.

WARDROBE SUGGESTIONS

Mid-July in Halifax can be hot, but if there is fog off the coast, the first hour or two in the morning can be cool. Nights are also usually cool. Bring something light and casual for the lobster party and something dressy for the President's Ball.

If you have a problem or want some information, look for the girls wearing the Nova Scotia Tartan scarves — they have all the answers!

See you in July!

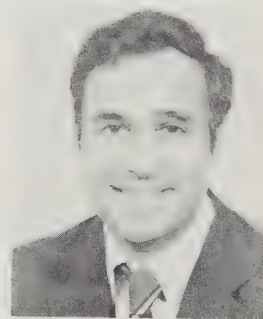
Please use the Registration Form in the Journal.

CDA NATIONAL CONVENTION CONGRÈS NATIONAL DE L'ADC

Halifax, Nova Scotia
July/juillet 13-16

Registration and hotel reservation forms are included at the back of this issue.

*Vous trouverez à la fin de ce numéro
une formule d'inscription et de réservation d'hôtel.*



co-président
Dr. Terry Ingham
co-chairman

INSCRIVEZ-VOUS
MAINTENANT

REGISTER
NOW

L'ouverture officielle du Congrès

Le Congrès annuel de l'Association dentaire canadienne pour 1980 débutera l'après-midi du dimanche, 13 juillet, à l'hôtel Nova Scotian, par l'inscription des participants. Ceux qui se seront inscrits préalablement recevront une pochette d'inscription à leur hôtel. Les salles d'exposition seront ouvertes ce même dimanche après-midi, au Centre des Arts de l'Université Dalhousie.

Le soir, les activités commenceront dès que Peter Fox, le crieur public d'Halifax, aura proclamé l'ouverture officielle du Congrès. Au dîner, on offrira aux amateurs de bisques un choix qui fera leurs délices.

LUNDI

Le programme des conférences scientifiques commencera à 10:00 heures. Les salles d'exposition seront ouvertes.

Le déjeuner d'investiture du président aura lieu à l'hôtel Nova Scotian. Le Dr Clyde Covit remettra le collier présidentiel au Dr Gil Utas.

Après le déjeuner, d'autres con-

férences seront données au Centre des Arts.

La soirée sera consacrée au plaisir et on servira un dîner de homard au nouveau centre Metro d'Halifax. Chaque convive aura droit à deux homards entiers avec les apprêts, du pain et du beurre fondu. Pour ceux qui n'apprécient pas les crustacés, on a prévu un autre menu.

MARDI

D'autres conférences scientifiques seront prononcées et on pourra encore visiter les salles d'exposition. Le déjeuner sera gracieusement offert par le gouvernement de la Nouvelle-Ecosse, à l'hôtel Nova Scotian.

Le bal du président aura lieu le soir. Il y aura un orchestre et le dîner plaira aux gourmets.

MERCREDI

Après les conférences de la matinée, un buffet sera servi dans les salles d'exposition du Centre des Arts de l'Université Dalhousie. Cependant du temps qui restera, on

organisera une visite du H.M. Dockyard, du musée maritime et d'un escorteur de contre-torpilleur.

TRANSPORT

Les principaux endroits où le Congrès se tiendra, à savoir l'Université Dalhousie, le centre Metro et l'hôtel Nova Scotian, se trouvent à deux ou trois kilomètres l'un de l'autre. Il est donc possible de se déplacer à pied. Cependant, les organisateurs du Congrès ont pensé à tout et, le matin, le midi et le soir, des autobus feront la navette entre les hôtels et le Centre des Arts.

Pour l'inscription, on trouvera des détails complets à la fin de ce journal.

Programme Scientifique

Lors du Congrès de l'ADC, le programme scientifique du second jour sera consacré à des conférences cliniques en trois parties qui seront présentées par les Drs Derek Jones, Bruce Graham, Elliott Sutow, E.L. Milne et L.E. Peacocke de l'Université Dalhousie.

LES CONFÉRENCES...

Les conférences seront données au cours de l'après-midi du mardi, entre 14:15 et 17:00.

La première, intitulée: "A Hard Look at Soft Liners" (Un regard sévère sur les revêtements légers), sera présentée par les Drs Jones, Sutow, Graham et Milne. Ils passeront en revue les connaissances actuelles sur les matériaux légers qui servent de revêtement pour les dentiers et ils évalueront leur efficacité tout en présentant les résultats des recherches menées sur neuf sortes de ces matériaux de commerce actuellement en usage.

La seconde conférence a pour titre: "The Fatigue Behaviour of a Dental Amalgam at two Frequencies" (Faiblesse d'un amalgame dentaire à deux

CONGRÈS NATIONAL DE L'ADC CDA NATIONAL CONVENTION

Halifax 13-16 juillet

Vous trouverez à la fin de ce numéro des formulaires d'inscription et de réservation d'hôtel.

Registration and hotel reservation forms are included at the back of this issue.

**INSCRIVEZ-VOUS
MAINTENANT**

**REGISTER
NOW**

Scientifique

fréquences) et portera sur les faiblesses des amalgames dentaires. Les Drs Sutow, Jones et Milne commenteront une enquête qui est actuellement en cours et qui étudie la réaction des amalgames sous l'effet d'un remplissage dynamique afin de connaître l'importance de leurs faiblesses dans les détériorations marginales.

La troisième conférence: "New Developments in Impression Materials and Cements" (Nouvelles découvertes sur les matériaux d'empreinte et les ciments) fait état des nouvelles découvertes sur les matériaux d'empreinte et les ciments. Elle sera prononcée par les Drs Jones, Sutow, Peacocke et Milne. Ceux-ci parleront des ciments de scellement à base de verre ionomérisée et présenteront des données sur la force ductile de ces matériaux comparativement aux autres ciments.

La conférence Grieve Memorial

La veille, soit le lundi, 15 juillet, à 9:00, le Dr Aaron Posen de l'Université de Toronto, en Ontario, prononcera la conférence Grieve Memorial. Le sujet en sera le suivant: "Perioral Muscle Force in Malocclusions — Its Effect on Orthodontic Diagnosis and Treatment" (Force du muscle orbiculaire buccal dans les malocclusions — son effet sur le diagnostic et le traitement d'orthodontie).

Cette conférence honore la mémoire du Dr George Grieve, un orthodontiste qui était à la fois praticien spécialiste et professeur au niveau collégial.

Le Dr Posen est professeur adjoint d'orthodontie à l'Université de Toronto. Il est membre de la Société des Orthodontistes de l'Ontario, de la Société canadienne des orthodontistes, de la Société des orthodontistes de la région des Grands Lacs, de l'Association américaine des orthodontistes et de la Mid Western Component of the Angle Society. Il a reçu son diplôme du Fellow of the Royal Dentist College of Canada et il est diplômé du Conseil américain des orthodontistes.(AB).

Activités sociales au Congrès

Des journées ensoleillées, des plages sablonneuses, de vastes étendues maritimes, de fraîches brises flairant bon le sel, des sites historiques, — tel est le Canada de l'Atlantique — et à Halifax, on trouve tout cela avec, en plus, de nombreuses boutiques et de bons restaurants.

Le Comité des conjoints du Congrès de l'ADC a préparé un programme d'activités comprenant un déjeuner et un défilé de modes le lundi midi, un dîner de homard le lundi soir et, le mardi, un choix de randonnées en autobus.

Le défilé de modes du lundi sera présenté par Carolyn Stewart du "Teazer" de Mahone Bay. Elle offrira à toutes les personnes présentes un rabais de 15 pour cent sur les vêtements en montre.

RANDONNÉES EN AUTOBUS

Circuit A — La pittoresque vallée d'Annapolis, avec visite du cap Blomidon (on y trouve des améthystes), de la maison historique de Prescott à Starr's Point et d'une boutique de nouveautés tout près. Il y aura un arrêt pour le déjeuner à l'auberge Old Orchard, à mi-chemin

entre Wolfville et Kentville.

Circuit B — Sur la rive Sud, aux villages de Chester et de Mahone Bay, avec possibilité de visiter leurs boutiques d'antiquités et de nouveautés. Le déjeuner sera servi à la Maison du Capitaine à Chester.

Hâtez-vous! Ce programme est offert seulement aux 250 premières personnes qui s'y inscriront. Chaque circuit est prévu pour 125 personnes. Veuillez indiquer votre premier choix.

AUTRES ACTIVITÉS

Pour ceux qui ne sont pas intéressés à faire ces randonnées ou dont la famille les accompagne, il y a plusieurs autres activités pour occuper leurs journées.

Bien que ce ne soient pas des programmes préparés par le Comité des conjoints, celui-ci fournira aux intéressés tous les renseignements désirés et se fera un plaisir de faire les arrangements nécessaires pour eux ou de leur indiquer où s'adresser. Les billets pour la visite du port et du North West Arm à bord du Hali-gonian III seront disponibles dès le dimanche soir. Cette croisière est idéale pour la famille.

Il est possible de faire plusieurs autres excursions comme, par exemple, visiter la ville, faire une croisière sur le Bluenose II ou aller à Peggy's Cove, mais vous devrez faire les arrangements vous-même. Pourquoi ne visiteriez-vous pas le vieil Halifax à pied?

Si vous désirez rester libre mais voulez quand même partager au dîner de homard, il y aura des billets disponibles.

VENTE ET EXPOSITION
D'OBJETS D'ART ET
D'ARTISANAT
Dimanche, le 13 juillet
à l'hôtel Nova Scotian

Art — Des arrangements ont été conclus avec Debbie Morrissey, directrice de la Galerie 1667 — Objets historiques — pour une exposition et une vente d'oeuvres d'art

Congrès

exécutées par des artistes de renom comme Geoffrey Armstrong, Ron Bolt, Douglas Elliott, Nancy Fortunato et Alan Wylie.

Artisanat — Une exposition et une vente d'oeuvres artisanales ont été prévues. Adressez-vous au service des renseignements pour en savoir plus sur la Boutique d'artisanat. Vous y trouverez entre autres des couvre-pieds faits à la main, des tissages et des bijoux.

CENTRE D'ACCUEIL

Le Centre d'accueil (Hospitality

suite) promet d'être un endroit intéressant pour recevoir ou rencontrer des gens. C'est là qu'il faudra vous adresser en cas d'urgence. Vous pourrez même y trouver une liste de gardiennes pour vos enfants. Chaque jour, il y aura un tirage à l'intention de ceux qui visiteront le Centre d'accueil.

GARDE-ROBE

Halifax à la mi-juillet peut être chaud, mais s'il y a du brouillard sur la côte, les premières heures de la matinée peuvent être froides. Les

nuits sont habituellement fraîches. Apportez-vous des vêtements légers et de sport pour le dîner de homard et une tenue de soirée pour le Bal du président.

Si vous avez des problèmes ou désirez un renseignement, vous pourrez vous adresser aux jeunes filles qui porteront le foulard écossais typique de la Nouvelle-Ecosse. Elles auront réponse à tout.

Nous espérons vous voir en juillet.

Veuillez utiliser le formulaire d'inscription inclus dans le Journal.

PROGRAMME CLINIQUE DU CONGRÈS NATIONAL DE L'ADC 14, 15 et 16 JUILLET 1980

LUNDI		MARDI			MERCREDI		
Cohn 9:00-12:00 Contrôle de la douleur (Ken Bentley) (Howard Katz) (Paul Rondeau)	MacAloney 9:15-10:30 Force du muscle orbiculaire buccal dans les malocclusions — son effet sur le diagnostic et sur le traitement (Aaron Posen) 10:45-12:00 Sauver une dent peut être facile!! (Tom Larder)	Cohn 9:00-12:00 Principes actuels en pédodontie (Ted Oldenburg)	MacAloney 9:15-10:30 La restauration physiologique et la diathermie chirurgicale en dentisterie restaurative (Ron Bannerman) 10:45-12:00 Données récentes sur les prothèses fixes (Vern Shaffner)	C O N F E R E N C E S É T U D I A N T S C L I N I Q U E S	Cohn 9:00-12:00 La dentisterie pour les gens âgés (A.S. Franks)	MacAloney 9:00-12:00 La correction des déformations dento-faciales (David Precious) (Gene Jensen)	
DÉJEÛNER: 12:00-14:00							
Cohn 14:00-17:00 La pédodontie pour le praticien général (Ted Oldenburg)	MacAloney 14:15-15:30 Conduite à suivre dans les cas de restaurations difficiles (Noel Andrews) 15:45-17:00 Examen de la tête et du cou à la recherche de . . . (Robert Hoar)	Cohn 14:00-17:00 Conduite à suivre avec un patient souffrant d'une maladie parodontaire dans les pratiques privées (Esther Wilkins)	MacAloney 14:15-17:00 Un regard sévère sur les revêtements légers Faiblesse des amalgames dentaires Nouvelles découvertes sur les matériaux d'empreinte et les ciments (Derek Jones) (Bruce Graham) (Elliot Sutow)	14-17h C O N F E R E N C E S É T U D I A N T S C L I N I Q U E S			

Rappelez-vous que le programme des activités sociales commence le dimanche, 13 juillet. Les organismes associés se rencontrent la semaine précédente. Renseignez vous sur les programmes cliniques.

Nouvelles Publications

Atlas radiographique d'anatomie dentaire.

Kasle, M.J.

150 pages, 71 planches, Masson, Paris 1979.

Traduction française par Jacqueline Limoge.

Cet Atlas traitant de l'interprétation radiographique des structures anatomiques d'intérêt pour l'étudiant ou l'hygiéniste, ou le praticien dentaire, se présente comme un document simple et facile. Il se divise en deux parties dont la plus importante, soit la première, est consacrée aux radiographies intra-orales. La deuxième partie traite des radiographies extra-orales.

La première partie présente des clichés périapicaux annotés de l'arcade maxillaire et de l'arcade mandibulaire, des clichés interproximaux et des clichés occlusaux. La seconde partie montre des vues latérales obli-

ques et panoramiques des maxillaires, des vues profilées et antéro-postérieures du crâne, des zones sinusiennes et de l'articulation temporo-mandibulaire.

La qualité de reproduction des clichés radiographiques a été réalisée de façon impeccable. Quant à la traduction française, de façon générale, elle est bien acceptable, cependant à plusieurs endroits, l'utilisation de certains termes comme "dent de lait", "pathologie pulpaire", "dent non évoluée incluse", "odontoïde complexe" est pour le moins discutable, pour ne pas dire que ces expressions devraient être éliminées totalement de notre vocabulaire.

Les francophones canadiens devront certes se familiariser avec le jargon dentaire, typiquement européen, qui est entaché de termes anglais d'origine améri-

caine, rendant ainsi le texte incompréhensible à l'occasion:

Exemples:

"tenon avec "inlay core" "

"entretoise en or du "bridge" "

"couronne taillée pour pose de "jacket" "

Il y aurait intérêt à réviser le texte anglais qui est à l'origine de plusieurs erreurs quant à l'identification juste de certaines structures anatomiques. Le lecteur pourra certes s'amuser à les découvrir, j'en cite quelques-unes:

Planche 1 E., Planche 2 G.,

Planche 4 A.,

Planche 8 A., Planche 10 G.,

Planche 55 I.

Cet Atlas est une contribution qui se distingue par son originalité, mais qui n'en demeure pas moins un livre pour lecteur averti.

Dr Denis Forest, Faculté de Médecine Dentaire, Université de Montréal.

F.D.I. Hamburg 1980

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2 AU 7 SEPTEMBRE

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Book Reviews

Drummond-Jackson's

Dental Sedation and Anaesthesia, 6th Edition

Editor. Peter Sykes
Publishers. Society for the
Advancement of Anaesthesia
in Dentistry

The Society for the Advancement of Anaesthesia was founded in Britain in 1957 by a small group of dedicated dentists and anaesthesiologists whose intention was to promote the safe use of general anaesthesia in dentistry. The leader of this group was S.L. Drummond-Jackson, a pioneer in the field of intravenous anaesthesia. As early as 1935 he had been using intravenous sodium thiopental and hexobarbital for general dentistry using a "single dose" technique — the dosage being calculated on the predicted time of the operation. It was, however, for his interest in methohexital (which was introduced around the same time as the Society's formation) that "D.J." will be mainly remembered. His advocacy of the minimal incremental technique to produce "light anaesthesia" for dental outpatients aroused much interest and emotion in the medical and dental field. His much publicised battle in the High Court of Britain in defence of the safety of this technique, ending in a legal standoff, was typical of this energetic, dedicated man.

The Society initiated courses to train dentists in general anaesthesia in 1958 in the converted basement of Drummond-Jackson's practice in Wimpole Street. The demand by dentists, however, was enormous and classes increased each year reaching a peak of 240 participants in one class in 1966. Internationally, member societies have been established in other countries, most notably in Australia, New Zealand and the United States and similar courses have been designed upon

the format established by the mother British Society.

This text evolved initially from the teaching material and lecturers' notes used at the S.A.A.D. courses. While it covers the basics of inhalation analgesia or sedation, it remains primarily concerned with intravenous techniques. There are some 21 contributors most of whom will be recognised by those familiar with the S.A.A.D. organisation. Some of these authors have made little or no change in their chapters of the previous edition apart from a change in title. This is not necessarily a criticism, as such chapters as "Superficial Veins of the Forearm" by Last would be difficult to improve for the level at which they are aimed. Others, however, could benefit from a more thorough updating especially since the previous edition was produced in 1971. The repeated suggestion that physical signs and a pulse-meter are sufficient to monitor a patient under general anaesthesia is contrary to North American standards yet here again we would enter into the argument as to whether an operator using the minimal incremental technique with methohexital is in fact producing "general anaesthesia". Some words of caution have also been added regarding this technique. Chapter XXVI now suggests that a limit of 250 mgs of methohexital or 10 minutes of anaesthetic time should be adhered to. Professor Bourne also suggests similar limitations and now advocates that one person must be solely responsible for administering the drug and monitoring the patient's response similar to the nurse anaesthetists now practising in the United States.

The Jorgensen or Loma Linda technique, while described in

detail, now carries the suggestion that the prolonged duration and the adverse effects of the drugs used has made this technique less popular than it once was. The fact that the barbiturate, pentobarbital, is now difficult to obtain in Britain is probably the main reason for the decline in its use there. Here in North America intravenous diazepam has succeeded the Jorgensen technique for shorter cases of 1 to 2 hours duration, the latter technique is still advantageous for longer cases.

The new chapters such as "Aetiology and Control of Pain in Dentistry", "Surgery and Equipment Design" and "Relative Analgesia" are meaningful and enhancing additions to the textbook. The others, despite some shortcomings, still provide clear, informative, practical information on the art of intravenous sedation and anaesthesia.

This book is to be recommended especially to those dentists or dental students embarking on the imported field of intravenous techniques and is a fitting memorial to Stanley Drummond-Jackson who passed away in 1975.

Dental Sedation and Anaesthesia was reviewed by David Donaldson, BDS, FDS, RCS, MDS, associate professor, Department of Restorative Dentistry, University of British Columbia.

Effect on the mandible of ligation of the external carotid artery and destruction of the inferior alveolar artery

Gerald Dufour, DDS
L.M. Jonck, MChD, DSc
Quebec, Que.

The successful transplantation of an autogenous tissue such as bone depends largely on the vascular bed of the area concerned. From a maxillo-facial point of view, segmental jaw surgery has developed to a fine art and technically the procedures have been mastered by most oral surgeons.

In view of the fact that gross anatomical disturbances are being undertaken, it is essential to review the blood supply to the face, with particular emphasis on the collateral anastomosis which will determine the success of a gross surgical intervention. The prediction of the outcome of the corrective procedure depends entirely on the blood supply.

From an experimental viewpoint, it was believed that the baboon, with its robust lower jaw, was a good model for the performance of maxillo-facial surgical procedures, especially in situations where the blood supply could be critical.

The normal arterial supply of the mandible is known to be provided by the inferior alveolar artery (a branch of the internal maxillary artery) and by the periosteal vessels which also supply the muscular attachments of the mandible.¹⁻⁴ Opinions vary as to the percentage of the mandibular blood supply contributed by each of these sources. Cohen¹ states that the inferior dental artery is the principal nutrient supply of the mandible and that there are anastomoses with the periosteal vessels. According to him, the lower border of the mandible

is mainly supplied by the periosteal system of blood vessels, while the ascending rami are supplied by vessels derived from the muscles of mastication.

Castelli² concludes from his study that the inferior border of the mandible receives its main supply from the inferior alveolar artery. Huelke,³ using various injection methods and materials, found that the inferior alveolar artery supplies the body while the angle, coronoid and condylar processes are supplied by the branches derived from the blood supply to the attached adjacent muscles. Hunsuck,⁴ using silicone rubber, demonstrated the vascular patterns of the mandibular area without establishing any definite conclusions in respect to the source of blood supply.

Many workers have performed surgical interventions aimed at interrupting the mandibular blood supply in order to clarify the compensatory arterial mechanisms that take over in a modified vascular system. As far back as the 19th century, research was conducted on human cadavers in order to establish the normal patterns of the arterial supply and as early as 1922 the modified arterial circulation had been studied (Euler,⁵ and Davidson cited by Skopakoff⁶). These studies demonstrated that by interrupting the inferior alveolar artery unilaterally, there existed collateral avenues for the blood supply to the mandible. These authors did not give details of the quantity, quality and hemodynamics of the compensatory arterial circulation.

In 1958, Skopakoff⁶ published a study in which interesting results were obtained by intercepting the arterial supply of the mandible at different levels. Working on dogs, Skopakoff successfully ligated the external carotid, the mental, the internal carotid, the maxillary and the inferior dental arteries. He noted that the most probable compensatory mechanism involved retrograde flow originating from the mental, labial and inferior dental arteries and that the branches of the internal carotid arteries also contributed to the impaired circulation. The author was aware of the fact that the mechanism might be different in higher animals, particularly with regard to the participation of the contra-lateral, lingual artery, and an anastomosis originating from branches of the internal carotid artery through the ophthalmic and infra-orbital branches. Prior to this, in 1922, Euler⁵ had observed that following the ligation of the inferior dental artery in cats, the mandible was still as richly supplied by blood as before, probably due to anastomoses between the inferior dental artery in the mandible and the lingual and facial arteries, which have branches of the external carotid artery.

In 1935, Howkins⁷ concluded from his work on monkeys that there was very little anastomosis past the mid-line of the mandible, but that it was present in lips and neighbouring areas, probably from free anastomoses of the mental and facial arteries. He also noted that after ligation of both external carotid arteries immediately distal to the facial trunk (thus blocking the flow to the inferior dental artery), there was still a rich vascular sup-

ply to the mandible; he concluded that the blood flow was presumably maintained by normal mucoperiosteal circulation, strongly reinforced by antidromic flow from the facial artery.

In 1948, Perint,⁸ working on cats, ligated the internal carotid and facial arteries and found that the area supplied by the facial artery was partially impaired. The author offers no explanation for this.

In 1968, Maloney and his co-workers⁹ performed a ligation of the external carotid artery in dogs, and found that after 24 hours "the internal carotid on the same side had increased by three to four times in diameter". They thus inferred that the compensatory blood flow might originate from the branches of the ipsilateral internal carotid artery via anastomoses through the internal maxillary artery and not from anastomoses from the intact contra-lateral vessels. In order to ascertain whether that pattern was maintained, they studied the circulation of other dogs two weeks after ligation of the external carotid artery and found confirmation of their previous results.

In 1975, Castelli et al¹⁰ ligated the inferior alveolar artery in monkeys and observed a fast retrograde blood flow through the mental artery and from the mandibular branch of the sublingual artery. The impression gained from the literature is that confusion exists (as far as the collateral circulation to the lower jaw is concerned).

The aim of this study was to determine the behaviour and pathways of the compensatory system by which the vascularization of the mandible of a primate is guaran-

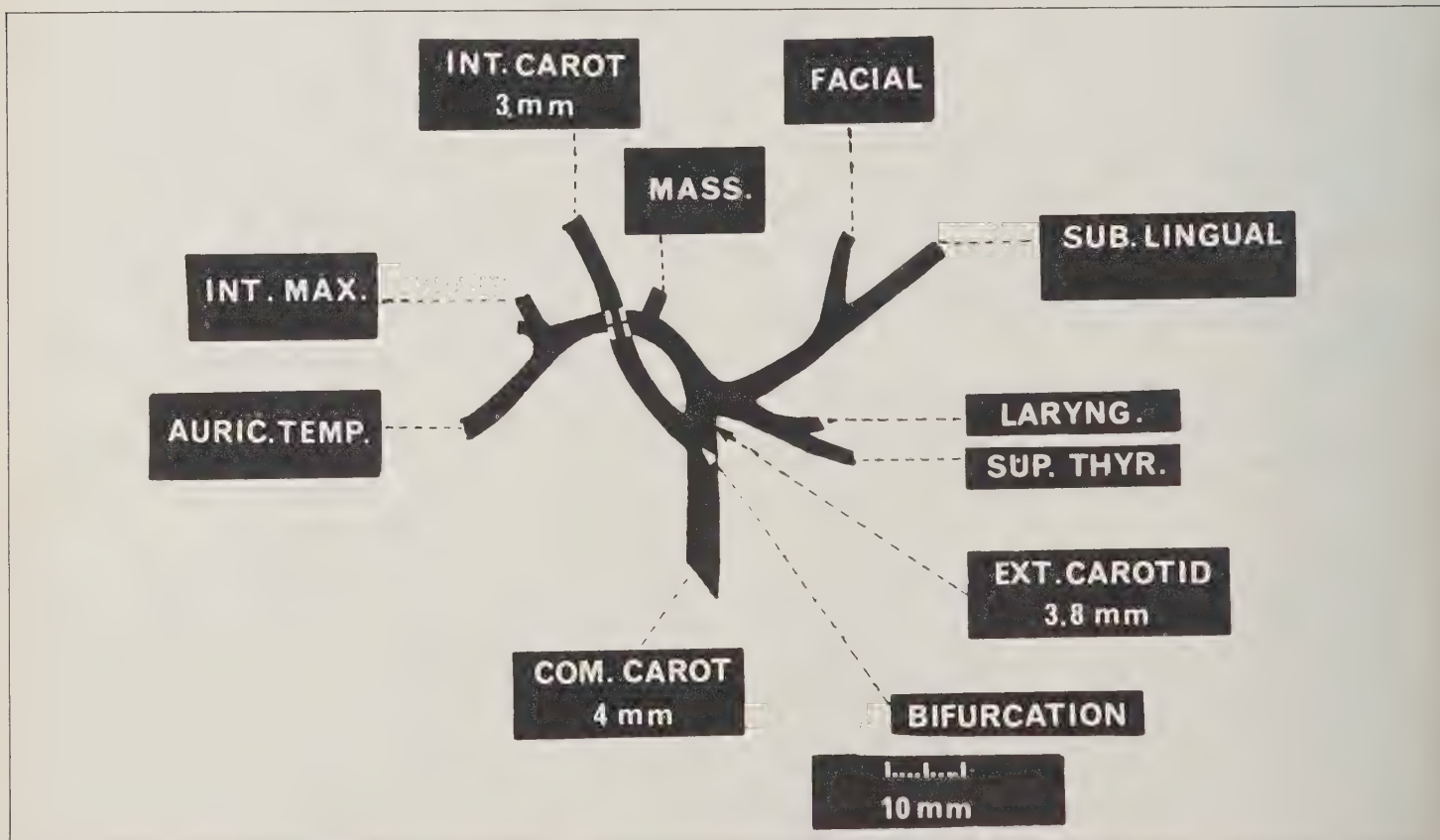


Fig 1 The normal carotid arteries and their branches, with emphasis on the tributaries of the external carotid artery in a 30-kg adult baboon.

teed when both a unilateral ligation of the external carotid artery and destruction of the inferior dental artery are sustained.

MATERIAL AND METHODS

A total of 12 baboons, each weighing approximately 30 kg, were used for the study (Fig 1). They were divided into four groups: in three baboons no surgery was performed (group 1); in three, the inferior dental artery was destroyed (group 2); in three, unilateral ligation of the external carotid artery was performed (group 3); three sustained the ligation of the external carotid artery and the destruction of the inferior dental artery (group 4) (Figs 2, 3, 4 and 5).

One baboon from each group was anaesthetized again after 15 days, one after one month, and one after six months; their common carotids were cannulated and their vascular system washed with heparinized saline; they were then perfused with silicone rubber of two different colours through each common carotid at the same time, rate and pressure. After completion of the filling, the baboons were kept at -10°C , dehydrated the following day, and processed for the study of the mandible.

Technique of ligation (groups 3 and 4)

The baboon was premedicated with phenylcyclidine (Sernylan*) 40 mg, atropine sulfate 0.6 mg, Azaperone** 80 mg, and then intubated via the oroendopharyngeal route, and the anaesthetic was maintained with O_2 -ether- N_2O . The animal being in a supine position, its head was extended posteriorly, the neck was shaved, prepped and draped. The incision was carried from a

point situated 1 cm below the angle of the mandible extending below the thyroid cartilage and 5 cm downward. By blunt and sharp dissection, the sternocleidomastoid muscle was exposed and retracted laterally, thus exposing the external jugular vein, the trachea and the carotid sheath; the latter was dissected, exposing the internal jugular vein and the vagus nerve. The common carotid, the omohyoid muscle and the hypoglossus nerve were identified, isolated and dissected superiorly until the bifurcation was encountered. The internal and external carotids along with the adjacent branches of the latter were isolated and two 00-silk ligatures were inserted and tied around the external carotid artery immediately distal to the carotid bifurcation.

Technique of destruction of the inferior dental artery (Groups 2 and 4)

The external aspect of the right mandibular body was exposed and an osteotomy was performed. The bone incision extended vertically from the inferior border, approximately 2 cm from the angle of the mandible to a point directly above the inferior alveolar canal. This incision was extended anteriorly for 5 cm and continued downwards. The rectangle thus delineated was then removed. The corresponding neurovascular bundle was excised for a similar length. The osseous segment was then repositioned and secured to the remaining bone with a ligature wire.

* Bio-ceutic Laboratories Inc., St. Joseph, Missouri-64502 USA.

** Ethnor Laboratories (Pty) Ltd., P.O. Box 1934, Johannesburg, Republic of South Africa.

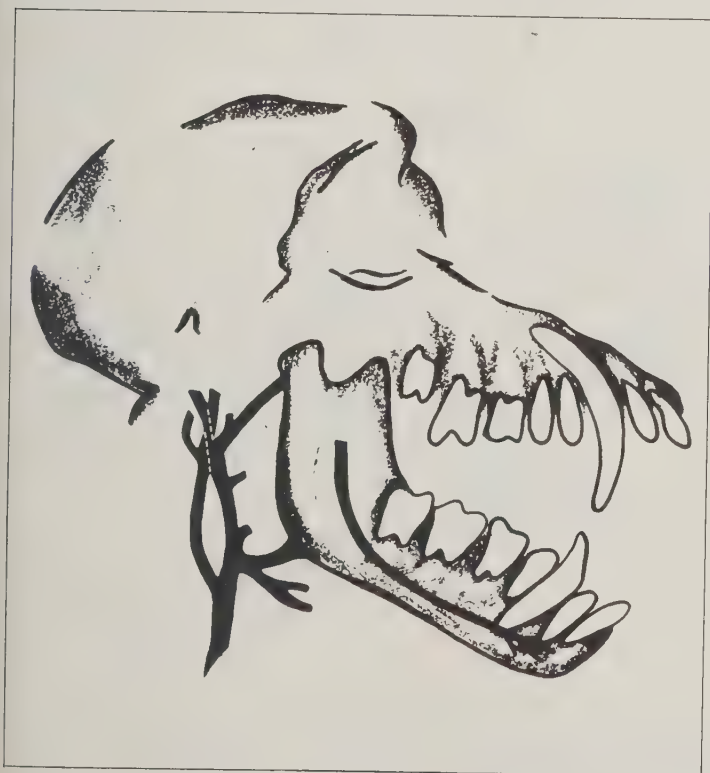


Fig 2 Group 1: Normal vasculature of a baboon.

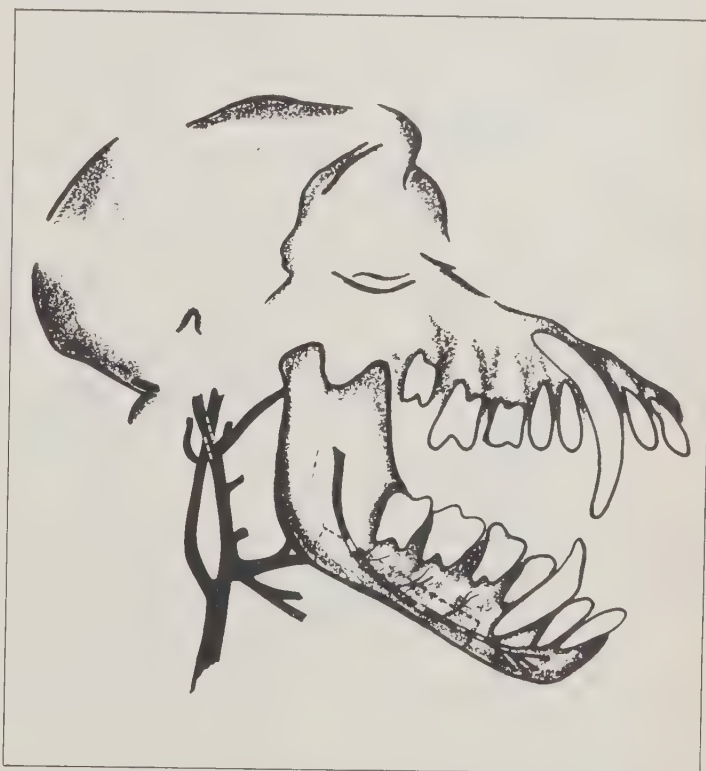


Fig 3 Group 2: Destruction of the inferior dental artery.

Technique for cannulating (all groups)

The intervention consisted of cannulating both common carotid arteries, flushing and perfusing the head and neck circulation with the perfusion material. A large-size catheter attached to a connecting tube and a 1000-cc heparinized saline bottle was inserted upward through the lumen and secured with two silk ligatures; the end of the catheter was kept 1 cm inferior to the bifurcation. The inferior portion of the common carotid was ligated with 00 silk sutures. a 1-cm incision was made longitudinally on both external jugular veins to promote exsanguination, while 6 liters of heparinized saline were used to flush the vascular system, thus ensuring effective removal of the blood volume during perfusion.

Technique of perfusion (all groups)

After completion of the flushing, the bottles were replaced by two 200-cc bottles, each containing 150 cc of liquid silicone rubber* and the curing agent. The bottles were elevated at a height that allowed the level of the perfusion liquid to register a pressure of 80 mm Hg, which could be obtained by gravity and could be maintained via a venous pressure monitoring apparatus (Pressure-veil**) connected at the point of entrance into the circulation.

The two liquid silicone rubber materials entered the circulation simultaneously on each side. During the course of the perfusion, one could see the vessel being filled particularly well through the buccal mucosa.

After completion of the filling, the cannulas were clamped and cut, and the baboon was placed overnight at -10°C to allow polymerization. The next day, it was

decapitated and thawed, then the head was placed in boiling water for three hours. Decortication of the soft tissue was followed by disarticulation of the mandible; the latter was kept in 15 per cent formaldehyde for one day, demineralized in 15 per cent formic acid for two days, washed for one day in tap water, dehydrated through successively more concentrated baths of ethyl alcohol for 10 days, defatted in two parts chloroform and one part methyl alcohol for three days and cleared with three parts of methylsalicylate and two parts of benzylbenzoate for 15 days.

RESULTS

A. Groups 1 and 2 — In both groups, the silicone rubber perfusion demonstrated a well defined midline separation, each colour having invaded its respective side in all animals.

B. Groups 3 and 4 — The invasion of the perfused material throughout the affected side of the mandible was the main feature in both groups; the colour of the perfused material corresponded mainly with the one used on the non-affected side. The contribution of the perfused material showing the colour used on the same side was present only in the superior third of the mandibular ramus in both groups. The vasa vasorum of the ligated external carotid artery were perfused with material of the same colour as the common carotid on the same side.

* Microfil, Canton Bio-Medical Products Inc., P.O. Box 2017, Boulder, Colorado 80302.

** Concept (R) Inc., 1270 U.S. 19, South Clearwater, Florida 33516. Manufactured under licence from Ramtech Inc.



Fig 4 Group 3: Ligation of the external carotid artery.

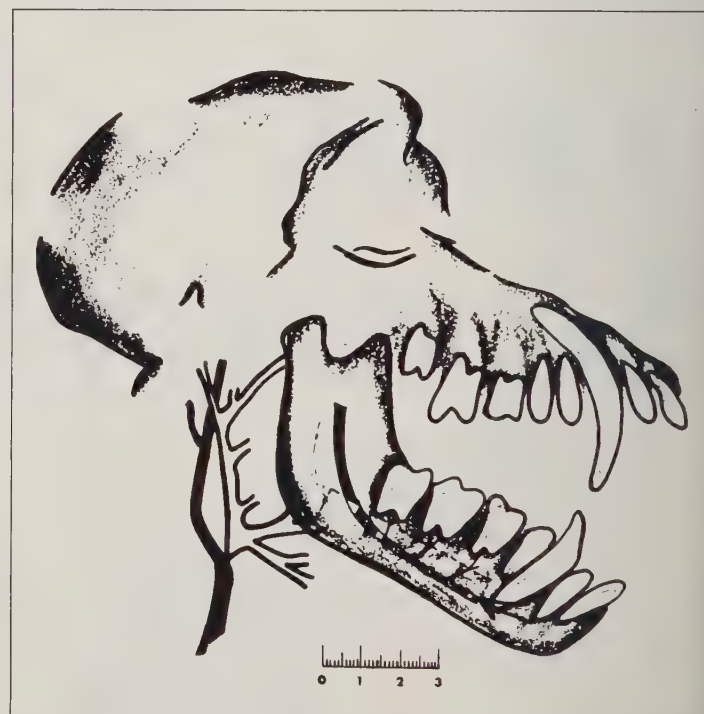


Fig 5 Group 4: Ligation of the external carotid artery and destruction of the inferior dental artery.

DISCUSSION

In the present study, the pathways of the blood supply to the body of the mandible have been demonstrated to originate 100 per cent from the contralateral side, most probably through anastomoses via the midline of the inferior third of the facial tissues. The ascending ramus received 63 per cent of its blood supply from the same source, while 50 per cent of the condylar vascularization was provided from branches of the internal carotid artery, showing anastomoses via the internal maxillary and infra-orbital arteries probably from the ophthalmic artery (Fig 6). This confirms the results of Euler,⁵ Howkins,⁷ Perint⁸ and Skopakoff.⁶

The internal carotid of the ligated side was found to have maintained the same diameter after 15 days, one month, and six months post-ligation, and there was cross-over at the midline of the lower third of the facial tissues in all of the ligated animals studied.

Our study performed on adult baboons is in disagreement with the work performed on dogs by Maloney et al,⁹ who found, after ligation of the external carotid artery, "an enlargement of the internal carotid artery on the same side up to three to four times," thus concluding that "there was minimal cross-over at the level of the midline" and that the blood supply would be mainly from the anastomoses via the internal maxillary and infra-orbital arteries.

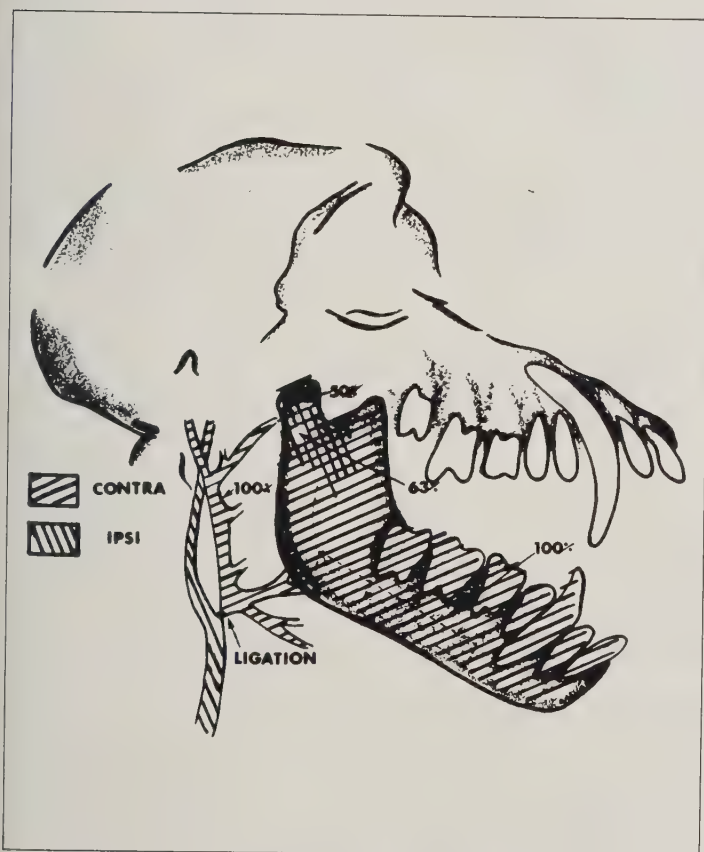


Fig 6 Illustrating the percentage of contribution to the mandible through the compensatory mechanism originating from the contralateral vascularity, after ligation of the external carotid artery and destruction of the inferior dental artery.

CONCLUSIONS

1. In this study on baboons, after a unilateral ligation of the external carotid artery and the destruction of the inferior dental artery, the contra-lateral circulation was the main contributor to the compensatory vascular supply to the affected side of the mandible.
2. No evidence was found to suggest that the ipsilateral internal carotid artery plays any role in supplying the body of the mandible.
3. The superior portion of the ascending ramus of the affected side was partly supplied by circulation from the ipsilateral side.
4. There was no enlargement of the internal carotid artery of the affected side.

Note: The yellow and orange silicone rubber (Microfil®) materials possess lead and chromium pigments which are affected by a number of solvents. During a period of one month, they were exposed to different solutions used in the preparation of our specimens, and it was found that boiling water, formaldehyde, formic acid, methyl and ethyl alcohol, chloroform, benzyl benzoate and methyl salicylate did not alter the substance or its color.

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This paper was made possible through a grant from the University of Pretoria, Republic of South Africa.

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SCIENTIFIC ARTICLES: should not exceed 2,500 words in length with a minimum number of illustrations, diagrams, photographs, tables or graphs. An average of 20 references is acceptable.

MAJOR REPORTS: are longer contributions dealing with diagnosis and treatment of dental disease, studies in education, clinical and laboratory research and other detailed investigations pertinent to dentistry and related fields.

CLINICAL REPORTS: are brief (up to 1,500 words) reports, case histories and clinical observations. References should be limited and a minimum of illustrations used.

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Ameloblastic fibro-odontoma -case report-

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The ameloblastic fibro-odontoma is a relatively rare, benign odontogenic tumour which contains both hard and soft tissues. The epithelial component exerts inductive change on the connective tissue element leading to the formation of focal areas of enamel, dentine and osteodentine. In the past, it was usually identified as ameloblastic odontoma, a term which loosely encompassed a variety of lesions ranging from the complex odontoma to the aggressive odonto-ameloblastoma. Miller et al,¹ reporting on seven cases of ameloblastic fibro-odontoma, credit Hooker² with initiating current opinion, also supported by the authors of the World Health Organization's monograph³ on the classification

SUMMARY

A case of ameloblastic fibro-odontoma, a rare odontogenic tumour, is presented, illustrating the typical clinical, radiographic and histological features of the lesion. of jaw tumours, cysts and allied lesions, that applies the name to a specific lesion with characteristic clinical and pathologic features. The use of the term, amelo-

blastic fibro-odontoma, while more accurately descriptive and indicative of the benign nature of the lesion, does not rule out the possibility that in some cases at least, one may be dealing with a hamartomatous formation with a limited growth potential and a tendency to mature into a mineralized mass, rather than a true tumour.

This example of ameloblastic fibro-odontoma is reported in order to add a further documented case to the literature.

CASE REPORT

A 15 year old male caucasian attended his dentist for routine dental care. He was referred following examination and x-ray.

Clinical findings

The patient's history and general evaluation revealed a healthy young man. His medical history was non-contributory, and there were no symptoms related to the jaws or teeth. However, he had noted a lack of eruption

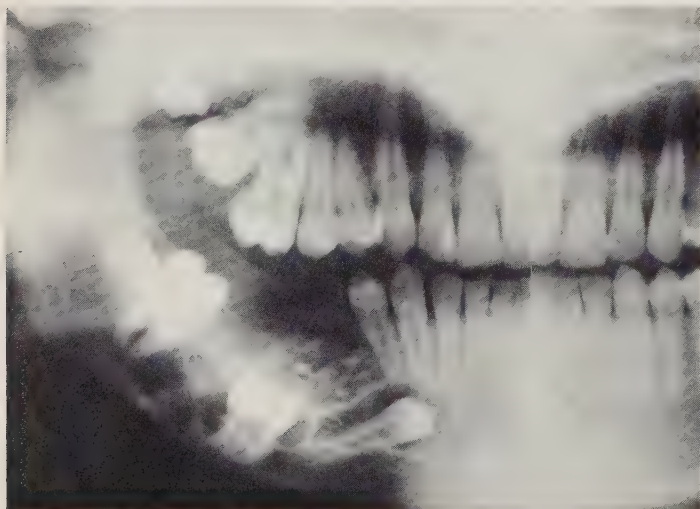


Fig. 1 — Panoramic x-ray of lesion in the right mandible.

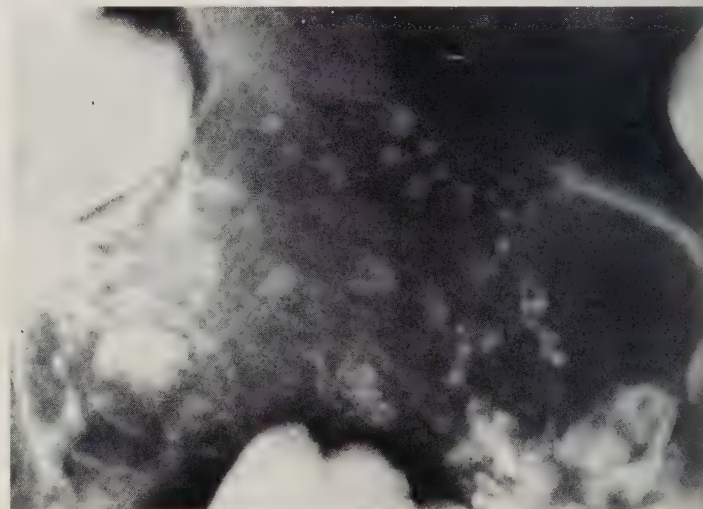


Fig. 2 — Intra-oral x-ray of lesion in the right mandible.

of some teeth on the right side of the mandible.

On examination, a slight fullness of the right side of the face was present over the mandible. A palpable, hard, painless swelling was found on the lateral aspect and lower border of the right mandible. Intraoral examination revealed the absence of all mandibular permanent teeth posterior to the first bicuspid on the right and obvious bucco-lingual expansion of the jaw. The oral mucosa was intact and of normal appearance except for indentations made by the opposing maxillary teeth, which were over-erupted. The maxillary right secondary molar had failed to erupt.

Radiographic examination

Panoramic and intraoral radiographs revealed a well defined radiolucent lesion in the right mandibular molar area containing scattered foci of calcified material (Fig 1 and 2). A number of unerupted teeth were in close proximity to the lesion and in appearance and number accounted for the teeth which had failed to erupt. It was noted that the first permanent molar had been displaced inferiorly, with marked curvature of the



Fig. 3 — Panoramic x-ray of right mandible one year after excision of lesion.

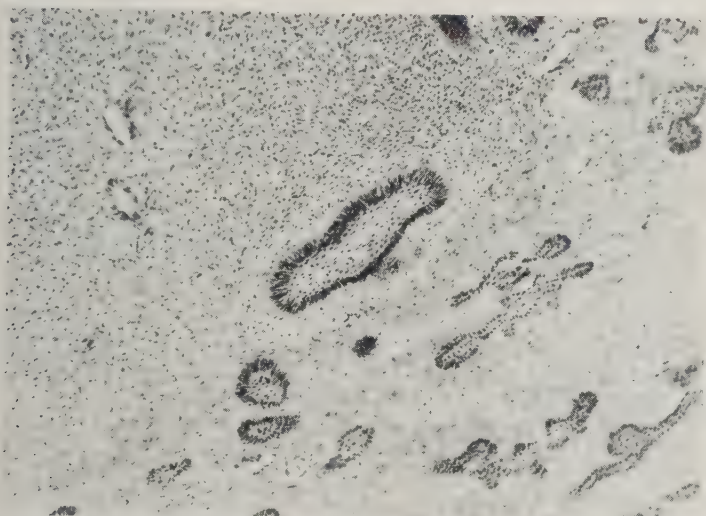


Fig. 4 — The central portion of the lesion showing islands of ameloblastic epithelium in a cellular fibrous stroma. (Hematoxylin and eosin x 250).

lower half of its roots at the lower border of the mandible. On its oral surface a part of the lesion appeared to be in direct continuity with the oral mucosa.

On the basis of the clinical and radiographic findings, a differential diagnosis of ameloblastic odontoma, calcifying odontogenic cyst, or calcifying epithelial odontogenic tumour, was made. A biopsy was carried out using local anaesthetic, and arrangements were made for further surgical treatment.

Microscopic examination of the biopsy material led to a working diagnosis of ameloblastic fibro-odontoma, and conservative surgical excision of the lesion was planned.

Admission findings

The biopsy site had healed and no change had occurred in the lesion. History and physical examination revealed no new information and the results of pre-operative laboratory investigations were within normal limits.

Operative procedure and findings

On the day following admission, the patient was brought to the operating room and under general anaesthesia the tumour and associated teeth were excised. A portion of the overlying oral mucosa in direct contact with the tumour surface was included in the resected specimen. The periphery of the tumour separated easily from bone and the unerupted teeth, all of which were removed with the exception of the developing third molar; in addition, the first bicuspid was removed and the entire cavity was thoroughly curetted. The neuro-vascular bundle was visualized for only a short portion of its course through the mandible and appeared to have been displaced by the lesion as it still occupied its bony canal. The edges of the bony cavity were reduced and smoothed, a small amount of Gelfoam inserted, and the incision closed for two-thirds of its length. A half-inch

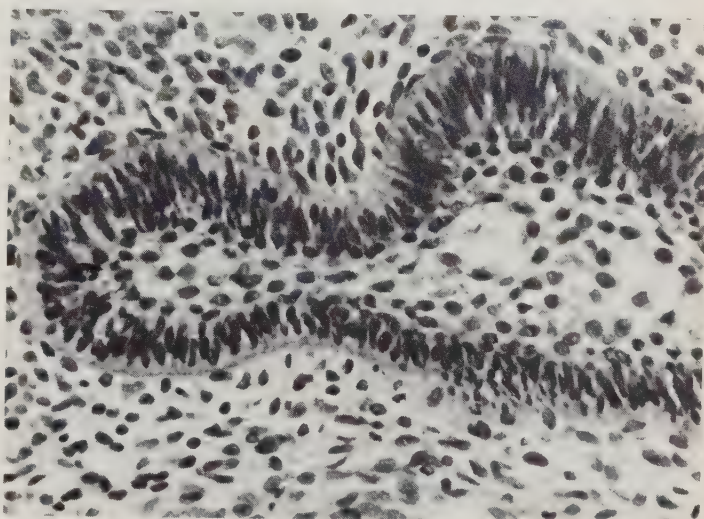


Fig. 5 — Ameloblastic epithelium with early formation of stellate reticulum. The surrounding stroma shows regular plump spindle cells. (Hematoxylin and eosin x 450.)

ribbon gauze pack, impregnated with Whitehead's varnish, was inserted to reduce the void. Recovery from anaesthesia and surgery was uneventful except for paraesthesia of the right mental nerve. At three weeks post-surgery, the cavity had filled with healing tissue and epithelialization was almost complete; paraesthesia of the lower lip was still present but steadily improving. One year later, x-ray of the mandible (**Fig. 3**) revealed good bone regeneration, no evidence of recurrence and normal sensation had returned to the lip.

Pathologic findings

The excised lesion consisted of an encapsulated mass measuring 25 x 20 x 15 mm. This was closely related to the surface mucosa but was not attached to it. The cut surface of the tumour showed a solid, pale, greyish appearance with small flecks of calcification, particularly at the periphery.

Microscopic examination revealed a tumour with several different histologic patterns. The predominant areas consisted of loose connective tissue containing islands of odontogenic epithelium (**Fig 4**). The connective tissue was moderately cellular with spindle-shaped fibroblastic cells. Occasional mitoses were present but there was no nuclear pleomorphism and no suggestion of transformation to an ameloblastic sarcoma. The epithelial islands showed peripheral nuclear palisading and formation of a central stellate reticulum (**Fig 5**).

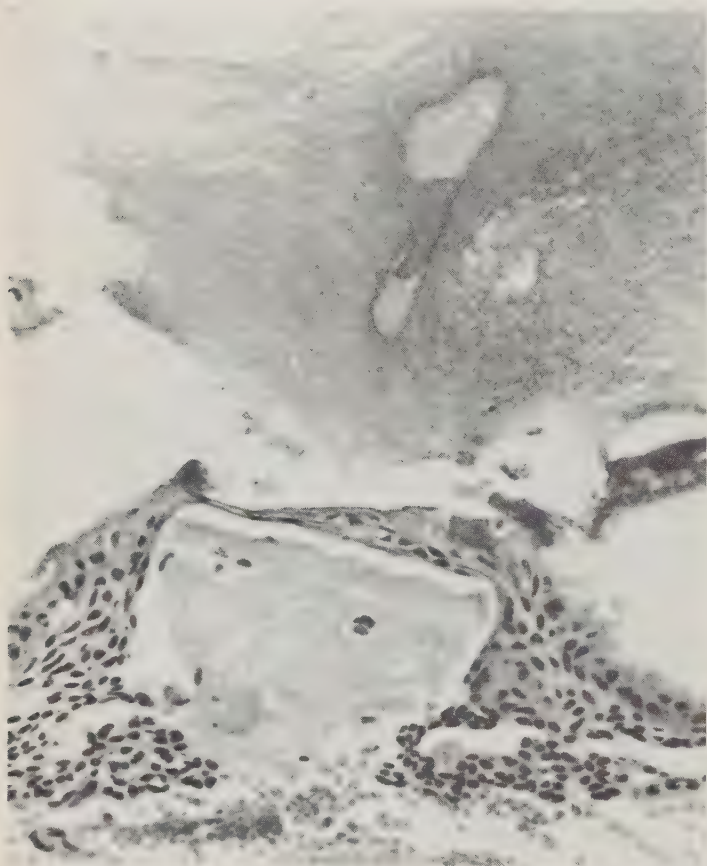


Fig. 6 — A peripheral microcystic area containing well-formed dentine. Most of the enamel has been removed by decalcification. (Hematoxylin and eosin x 375.)

The second microscopic pattern was more prominent at the edge of the lesion. This consisted of irregular islands of mature dentine and osteodentine set in a rather dense fibrous stroma. In many foci the dentine was contained in microcysts lined by plump eosinophilic cells (**Fig 6**). Enamel was identified in some of the undecalcified sections.

The tumour therefore demonstrated a complex growth of various odontogenic tissues. The first pattern had the appearance of an ameloblastic fibroma, and the second contained mature elements similar to normal tooth structures. This combination has been called ameloblastic fibro-odontoma.

DISCUSSION

This case provides a good example of the clinical, radiographic and histological features of the ameloblastic fibro-odontoma. Although the lesion is more commonly reported in young children, it may elude detection until well into the second decade or later. The radiographic evidence in the present case suggests that the lesion was initiated early in life, certainly before the fifth year. The displacement of the first permanent molar downwards to the lower border of the mandible and the curvature of the apical half of its roots presumably indicate that upward movement of the first molar was obstructed by the tumour at an early stage of root development. The size of the lesion, therefore, represents at least 10 years of growth, and the microscopic evidence suggests the likelihood of further potential for growth. The occurrence of some areas of moderate cellular activity in the connective tissue element of the lesion underlines the need for thorough sectioning of the operative material, and careful clinical follow-up to exclude the possibility of ameloblastic fibro-sarcoma or other rare malignant odontogenic lesions.

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Syndrome de Gorlin

présentation d'un cas et revue de la littérature

Daniel Forget, dmd,
Québec, Québec

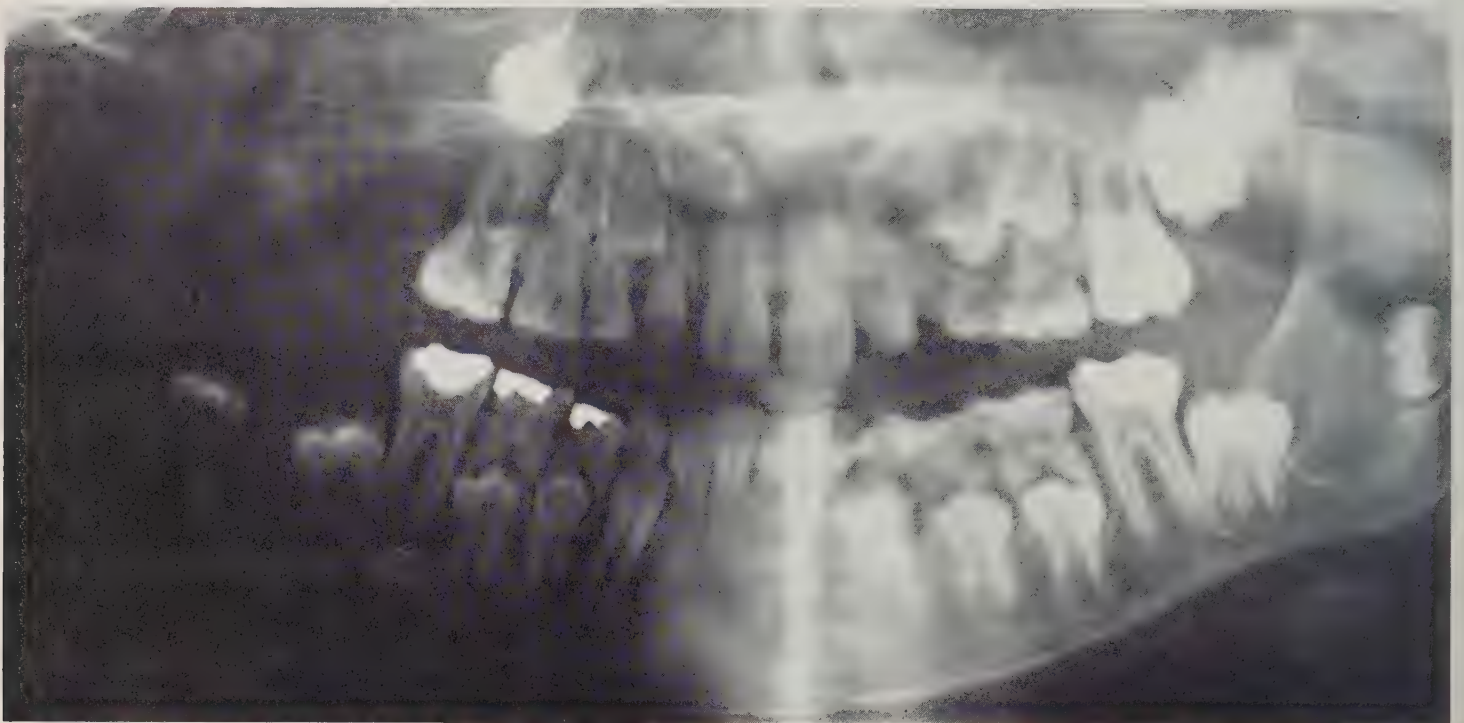


Fig. 1 démontrant les trois lésions kystiques

Une jeune patiente de 11 ans, Brigitte K., se présenta à la clinique de Chirurgie buccale et maxillo-faciale en janvier 1974. Elle était référée par son dentiste pour un oedème de la joue droite avec évidence de multiples lésions aux mâchoires.

Elle frappait l'observateur par sa grande taille et son allure frêle; elle accusait un front proéminent et un visage allongé se terminant par un menton de en forme de "V". Ses membres étaient longs et ses doigts effilés.

L'examen sommaire de sa bouche montrait une dentition en bon état; le palais était étroit et arqué. L'orthopantomogramme démontrait trois⁽³⁾ immenses zones radiolucides, (fig. 1), dont deux⁽²⁾ aux angles de la mandibule, respectivement de 3.5 cm et 4.5 cm à gauche et à droite, cette dernière se rendant jusque dans l'apophyse coronoïde. Elles contenaient les dents no. 38 et 48. La troisième, au maxillaire droit, remplissait tout le

sinus maxillaire à partir de la tubérosité et contenait les dents no. 17 et 18. Devant la multiplicité et l'étendue des lésions, la patiente est admise pour évaluation additionnelle.

PREMIÈRE HOSPITALISATION

HISTOIRE ET EXAMEN

Ses antécédents personnels étaient nombreux. Son poids à la naissance était de 8 livres et 10 onces, mais on remarqua alors certaines anomalies, telles: présence d'un doigt surnuméraire à gauche, pénis miniature et petites tumeurs cutanées autour des yeux. Durant son enfance, sa croissance avait toujours été rapide. Elle dépasse rapidement en grandeur un frère plus âgé de 14 mois. À 4 ans, elle porte des lunettes pour corriger un strabisme. Elle montre un nystagmus congénital. À 7 ans, elle souffre de troubles de la démarche (coxa valga). À

8 ans, elle dépasse en gradeur un frère âgé de 11 ans. Elle subit cette année-là une chirurgie correctrice pour fistule uro-génitale et clitoris hypertrophié. À 9 ans, elle se voit apposer le diagnostic de syndrome de Marfan devant sa grande taille et un rapport segment supérieur sur segment inférieur typique de 0.80 (pour une normale à 0.93).

L'histoire familiale révèle que le père est atteint d'une malformation de la colonne vertébrale cervicale, quoiqu'en bonne santé. Il est d'origine écossaise. La mère, d'origine irlandaise, est normale. La fratrie est au nombre de 7 et affectée de différentes anomalies. Le tableau I décrit les caractéristiques communes et leur fréquence dans la fratrie. On y remarque plusieurs traits en commun avec notre patiente.

À l'examen de notre patiente, on remarque de multiples lésions et taches pigmentaires autour des yeux et au cou. Le faciès est allongé. Il n'y a pas d'évidence de luxation du cristallin. Elle souffre toujours de strabisme. L'auscultation cardiaque révèle une tension et un rythme normal; un souffle systolique d'éjection grade II/VI à la région apexienne, variant avec la respiration, peut être entendu. L'auscultation pulmonaire est normale. La colonne a une scoliose à convexité gauche.

EXAMENS DE LABORATOIRE

- Formules érythrocytaire et leucocytaire normales.
- Examen sommaire et microscopique des urines normal.
- Radiographie cardio-pulmonaire normale.
- Électrocardiographie normale.

- Calcium, phosphore, dans les limites normales.
- Phosphatase alcaline à 37 unités (pour une normale de 2 à 15 unités).
- Test au nitroprusside d'argent négatif.



Fig. II Image cardio-pulmonaire normale Image thoracique normale.

Fratrie Traits	M.K. ♀ 14 ans	H.K. ♂ 13 ans	A.K. ♂ 12 ans	A.K. ♀ 7 ans	J.K. ♂ 6 ans	D.K. ♂ 4 ans	J.K. ♂ 2 ans
Naevi ou Taches Multiples	+++	++	0	0	0	0	0
Genu Valgum	0	0	+++	+	0	+	0
Scoliose	0	+	+	0	0	++	+
Prognatisme	++	0	++	++	0	0	0
État mental	supérieur	normal	débilité	normal	normal	normal	normal

Tableau I Caractéristiques de la fratrie de Brigitte K.

- +++ Important
- ++ Intensité modérée
- + Présent

ÉVOLUTION

La patiente fut préparée pour anesthésie générale avec induction au penthotal-anectine et entretien au protoxyde d'azote et halothane. Le kyste mandibulaire gauche est énucléé. À droite, le chirurgien constate le danger imminent d'une fracture pathologique de la mandibule. Les canaux mandibulaires sont intacts. Au maxillaire, après incision, le kyste s'étend de la région canine jusqu'à la fosse ptérygo-maxillaire. En supérieur, la paroi du kyste est accolée au plancher de l'orbite et après dissection, le canal sous-orbitaire peut être visualisé intact. Les plaies sont refermées et la patiente tolère bien l'intervention. Les suites post-opératoires sont sans histoire.

Le rapport pathologique décrit des kystes avec parois scléreuses, tapissés d'un épithélium malpighien mince, avec couche basale proéminente et signes de kératinisation. (Fig. III et IV). Les parois conjonctives contiennent à des endroits, des cavités secondaires où l'épithélium est para-kératinisé. (fig. III). Le tout compatible avec le diagnostic de kératokystes.

La patiente après un court séjour reçu son congé et des contrôles fréquents montrèrent une guérison sans complication.

EXAMENS ADDITIONNELS

Le problème de sa grande taille continuait d'inquiéter les parents. Des examens de laboratoire additionnels furent entrepris dans un autre centre hospitalier en vue de vérifier le diagnostic déjà posé ailleurs, de syndrome de Marfan et d'investiguer la grande taille. L'histoire et l'examen sont superposables à l'hospitalisation précédente:

- Le caryotype: XX 46 normal.
- La chromatine sexuelle est positive à 15%.
- L'hormone de croissance plasmatique est normale et supprimée par une surcharge au glucose. La réserve hypophysaire est normale en hormone de croissance.

- Le cortisol plasmatique est normal et est supprimé par l'épreuve au métopyron et aussi par l'épreuve à l'arginine.
- Une consultation en cardiologie pédiatrique démontre que le souffle cardiaque est fonctionnel (variable avec la respiration et disparaissant en valsalva).
- L'ophtalmologiste ne peut mettre en évidence une luxation du cristallin.

Le diagnostic de syndrome de Marfan est donc fortement mis en doute chez la patiente, et on conclut tout au plus à un aspect marfonoïde.

DEUXIÈME HOSPITALISATION

Il s'écoule deux⁽²⁾ ans et la patiente est revue à la clinique de Chirurgie buccale en juillet 1975, à nouveau pour tuméfaction à la joue gauche. Elle est âgée maintenant de 13 ans. Elle atteint 1 m 80, pour un poids de 50.4 kg. L'examen radiologique démontre un kyste qui remplit le sinus maxillaire gauche cette fois. (fig. V)

Les dents no. 27 et 28 sont comprises dedans. On procède donc à la réadmission de la patiente. Les examens de laboratoire sont essentiellement normaux, sauf pour une phosphatase alcaline élevée à 227 unités (pour une normale de 20 à 80 unités). Elle est amenée à la salle d'opération. Le kyste s'étend de la fosse canine à la fosse ptérygo-maxillaire et repousse la dent no. 28 au plancher de l'orbite où elle est fixée. L'opération se déroule bien et la pièce est envoyée en pathologie. Le rapport à nouveau conclut à un kératokyste. Le revêtement épithélial de type malpighien est mince et para-kératinisant avec micro-kystes secondaires avec aspect semblable à la figure III et IV. On observe sur la coupe de la dent no. 28 décalcifiée, une continuité entre la paroi épithéliale du kyste et le sac folliculaire de la dent. La patiente a une bonne évolution. Durant le même séjour hospitalier, une consultation est demandée en dermatologie devant des lésions cutanées papuleuses disséminées impliquant les paupières, le nez, le dos et l'abdomen. Un diagnostic de molluscum contagiosum est avancé et notre patiente reçoit plusieurs séances de cryothérapie. De-



Fig. III Coloration H.E.S. Kyste et kyste secondaire.



Fig. IV Coloration H.E.S. Épithélium malpighien.

vant l'aspect bénin des lésions, le dermatologiste ne biopsie pas les lésions et la patiente reçoit son congé de notre service avec contrôles périodiques.

Peu de temps s'écoule, une période de 1 mois, et elle est réexaminée en ophtalmologie pour un problème de strabisme. L'examineur à ce moment note trois⁽³⁾ petites tumeurs au paupières. Une biopsie de une de ces lésions revient: formation tumorale bien délimitée constituée de boyaux anastomosés de cellules de type basal. L'aspect morphologique de cette coupe mis en rapport avec l'histoire clinique antérieure, amène le pathologiste à conclure au syndrome à multiples naevi à cellules basales (syndrome de Gorlin). (fig. VI et VII). Le diagnostic final est enfin posé en août 1975 et a dû attendre l'apparition de deux⁽²⁾ caractéristiques hautement suggestives.

De août 1975 à août 1977, on doit énucléer chez elle quatre autres kératokystes vis à vis des dents 13 et 23, puis à l'apex de la dent 22 (fig. VIII) et enfin à la région de la dent 47 (fig. IX). Aucun des kystes préalablement enlevés⁽⁴⁾ n'a récidivé depuis. Le service d'ophtalmologie de son côté enlevé trois⁽³⁾ autres lésions basocellulaires à la paupière gauche en janvier 1978. À 16 ans, elle présente l'aspect et le faciès caractéristiques du syndrome de Gorlin (fig. XI et fig. XII).

DISCUSSION

Les symptômes qui ont amené Brigitte K. à consulter à l'origine, en chirurgie buccale et maxillo-faciale et l'histoire clinique qui a suivi, peuvent être considérés comme assez typiques du syndrome de Gorlin ou "mul-

tipte nevoïd basal-cell carcinoma syndrome"*. Les manifestations sont nombreuses et variées. (tableau II).

Ainsi l'âge d'apparition des premiers signes et symptômes sont d'importance pour le chirurgien buccal. Selon Brannon⁽³⁾, l'incidence des kératokystes, en se basant sur une des séries les plus importantes de la littérature, est maximale durant les deuxième et troisième décades de la vie. L'incidence diminue progressivement durant les décades suivantes, mais ils peuvent se rencontrer jusqu'à la neuvième décade. La multiplicité des kératokystes chez une même personne est associée au N.B.S. dans 10 cas sur 20, cependant qu'elle est associée au syndrome de Marfan dans un cas sur 20. La tendance aux multiples kératokystes est plus marquée chez la femme, le rapport femme: homme étant de 1.71:1.

Radden et Reade⁽⁵⁾ dans une longue série, rapportent que sur 55 individus porteurs de kératokystes, (sans qu'il y ait plusieurs kystes chez le même individu), 4 sont atteints de N.B.S.

GÉNÉTIQUE

Les auteurs s'entendent pour dire que la maladie se transmet sous la forme d'un trait dominant avec une bonne pénétrance, mais expressivité variée⁽²⁾. Certains, tels Holmes⁽⁶⁾, appuyé par Witkop⁽³⁾, émettent la possibilité de mutation spontanée, impliquant l'âge paternel avancé, lors de la conception. Plusieurs cas ont été rapportés d'enfants atteints sans qu'un des deux parents soit atteint. Le même mécanisme serait impliqué dans 15% des cas de syndrome de Marfan.

Les manifestations du N.B.S. sont issues, selon l'étude



Fig. V

citée en⁽²⁾, d'un seul gène qui aurait de multiples manifestations. Plusieurs autres maladies montrent des signes et symptômes communs avec le N.B.S. Un exemple est le fait que les individus atteints du syndrome de Marfan ont aussi la tendance à fabriquer de multiples kystes aux mâchoires⁽²²⁾. Des systèmes biochimiques et physiopathologiques communs, peuvent être influencés par des gènes de maladies différentes et résulter en des lésions cliniquement semblables. Dans un même ordre d'idée, il a été observé que l'incidence de médulloblastome chez les enfants de parents atteints du N.B.S., était accrue par rapport à la population. Gorlin et Sedano⁽⁷⁾, appuyés par Witkop⁽²⁾, expliquent que la mort, qui survient habituellement en bas âge chez les sujets atteints de médulloblastome, empêche l'expression éventuelle du B.N.S. à un âge plus avancé (ils proposent d'étudier ce phénomène plus en profondeur).

MANIFESTATIONS PRÉCOCES

Les manifestations du N.B.S. sont multiples (tableau II), et apparaissent à des âges différents. Certaines sont précoces mais non reconnues par le clinicien. Ainsi Holmes⁽⁶⁾ demande avec raison combien de cliniciens incluraient le N.B.S. dans le diagnostic différentiel, devant un enfant qui présente une hydrocéphalie ou des côtes bifides. De même la présence de dyskératose palmo-plantaire apparaissant chez un enfant de 5 ans sous forme typique de lésions punctiformes, hyperhémées, évoque peu le diagnostic de N.B.S. malgré qu'elles soient pratiquement diagnostiques.

Lorsqu'il faut attendre les manifestations plus communes du syndrome, on doit se rappeler que les lésions cutanées à cellules basales dans la population en général, appartiennent au N.B.S. dans 5% des cas. Les kératokystes pris dans la population en général, appartiennent au N.B.S. dans 5.4% des cas.

Tanasen et al.⁽⁸⁾ ont démontré une augmentation du taux des phosphatases alcalines sériques chez les porteurs du N.B.S. Ces élévations étaient inconstantes et peuvent porter à interprétation, particulièrement chez de

jeunes individus en croissance active, avec de plus des lésions osseuses souvent multiples et extensives aux maxillaires.

Par le passé, on a déjà fait état du manque de réponse à l'injection de P.T.H., qui aurait été observé chez six individus⁽²⁾. On ne considère plus le test valable, car cette caractéristique n'est plus admise aujourd'hui⁽¹¹⁾. On a pu décrire, cependant, un état de pseudo-hypoparathroïdie chez quelques sujets atteints de N.B.S. mais sans pouvoir prouver que les deux conditions soient reliées ou du moins présentent un risque accru de se retrouver chez un même individu.

PATHOLOGIE

La localisation la plus courante des kératokystes, est la troisième molaire inférieure: 9.9% des cas selon Brannon⁽³⁾. La troisième molaire supérieure comprend 12.3% des cas. La région antérieure du maxillaire (incisives et canines): 12.3% des cas, suivie de la mandibule (corps et branche montante): 8.2%.

Stolinga⁽⁹⁾ et Donatsky⁽¹⁰⁾ confirment ceci dans sa tendance générale, quoique avec des séries beaucoup plus restreintes.

On peut retenir que l'incidence à la mandibule est deux fois plus fréquente qu'au maxillaire⁽¹¹⁾. Cliniquement le kératokyste est le plus souvent dans une relation "dentigère" avec une dent. Il faut utiliser le terme dentigère avec prudence. Brannon⁽⁴⁾ ainsi que Kramer et Toller⁽¹²⁾ nous mettent en garde: l'épithélium kératinisant du kératokyste ne vient pas du kyste dentigère lui-même, mais vient s'accoler de l'extérieur pour le transformer. Ce même processus peut se produire sur les autres types de kystes: résiduels, primordiaux, globulo-maxillaires. Ces différents kystes ont plus ou moins tendance à se kératiniser (tableau III).

On voit d'après le tableau que le kyste primordial a une forte tendance à devenir kératinisé. Le kyste dentigère a peu de tendance à devenir kératinisé. Vu que les kystes dentigères sont beaucoup plus fréquents en clinique, que les kystes primordiaux ou autres, cela expli-

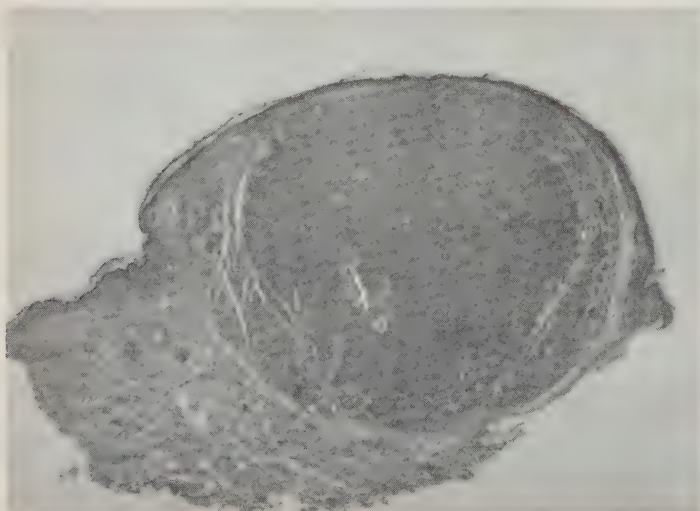


Fig. VI Coloration H.E.S. Tumeur baso-cellulaire typique.

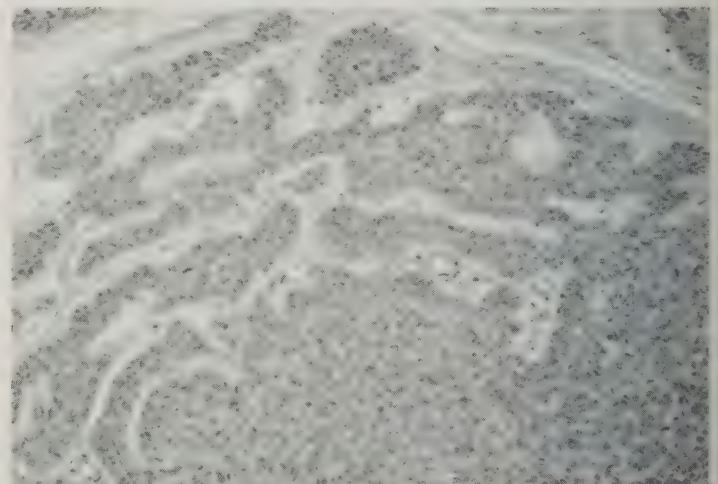


Fig. VII Coloration H.E.S. Détails montrant les boyaux anastomosés de cellules basales.

que pourquoi la majorité des kératokystes sont trouvés en clinique en relation dentigère, même si le kyste dentigère a beaucoup moins de tendance à devenir kératinisé que les autres kystes. Le kyste primordial étant plus rare, on retrouve peu de kératokystes primordiaux même si le kyste primordial a une forte tendance à devenir kératinisé. Tout ceci a été la source de confusion dans la littérature. Robinson⁽¹³⁾ a proposé la classification suivante: Kyste primordial, kyste primordial kératinisant; Kyste dentigère, kyste dentigère kératinisant; Kyste périodontaire (apical, latéral) kyste périodontaire kératinisant; Tous les autres non classés: kératokystes buccaux.



Fig. VIII

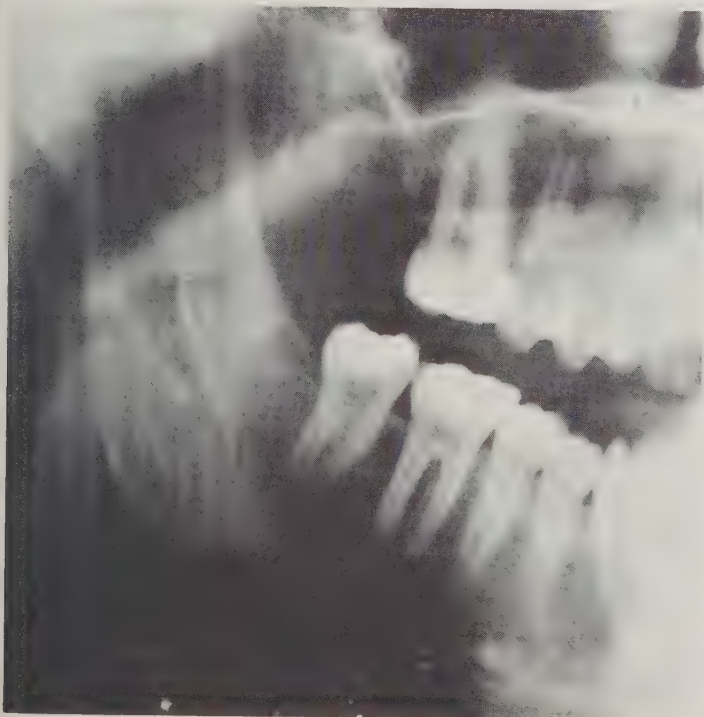


Fig. IX

HISTOLOGIE

Les caractéristiques de la paroi des kératokystes sont bien connues. On peut apporter quelques précisions récentes à ce sujet. Brannon⁽⁴⁾ a trouvé que l'épithélium était parakératinisé dans 83.2% des cas, orthokératinisé dans 9.7% des cas et avec des espaces ayant les deux types dans 7.1% des cas. Il constate une tendance plus marquée à la récurrence chez les kystes avec épithélium parakératinisé. Les kératokystes qui sont en relation dentigère ont plus tendance à être orthokératinisés (46.2% des cas). Cette dernière observation le porte à conclure que le kyste dentigère peut subir une transformation de son épithélium réduit de l'émail et devenir kératinisant sans l'apport des restes de Serres.

Wysocki et al.⁽¹⁴⁾ rapporte dans une comparaison des kystes orthokératinisés et parakératinisés à l'aide du microscope électronique, que l'épithélium du kyste parakératinisé est beaucoup plus cellulaire avec cellules basales polarisées. Cela expliquerait son activité mitotique augmentée et la prolifération rapide entraînant formation de squames qui sont facilement délogées. Ces caractéristiques de l'épithélium parakératinisé seraient très utiles pour expliquer le comportement clinique des lésions.

Le phénomène de bourgeonnement de la couche basale dans la capsule rapporté par Stoelinga⁽⁹⁾ est plus fréquent dans les kératokystes qui démontrent des changements inflammatoires. L'aspect morphologique des îlots ainsi formés serait semblable aux lésions cutanées (épithélioma à cellules basales). Ceci est très controversé. Brannon⁽⁴⁾ démontre que les kystes satellites sont plus souvent issus des restes de Serres que de ce processus de bourgeonnement avec formation d'îlots.

Les cellules mêmes de la couche basale varient de cuboïdales à cylindriques. Les cellules cylindriques peuvent ressembler à des améloblastes; on a observé qu'un noyau polarisé éloigné de la membrane basale et hyperchromatique pouvait être associé à une transformation en améloblastome. Chez les porteurs de N.B.S., Brannon⁽⁴⁾ a observé toutes les caractéristiques précédentes avec une fréquence accrue: plus de restes de Serres, plus de kystes satellites, plus de tendance à la transformation en améloblastome. Ces observations sont appuyées par d'autres, tel Waldron⁽¹³⁾. Enfin, Brannon⁽⁴⁾ rapporte aussi qu'il y a possibilité de trouver des calcifications dans les parois des kératokystes.

Philipsen et al.⁽¹⁶⁾ ont démontré que les kystes associés au B.N.S. ne sont pas fondamentalement différents des kératokystes en général. Ils ont trouvé que ces kystes démontraient beaucoup d'activité collagénolytique surtout à la ligne de séparation entre la couche basale de l'épithélium et la capsule fibreuse du kyste. Ceci expliquerait la facilité avec laquelle la paroi mince de ces kystes se déchire lors de manipulations chirurgi-

cales. Cette remarque aurait déjà été faite par Donoff et al.⁽¹⁷⁾. Ils ont proposé qu'en plus de l'activité collagénolytique, il y aurait une activité immunologique. Ils ont isolé des fractions gamma 1 et gamma 2 de macroglobulines dans la paroi des kératokystes qui seraient responsables de l'activité collagénolytique. Cette activité serait en partie responsable de la croissance du kyste. Elle manque dans le kyste dentigère simple. Le mécanisme principal pour expliquer la croissance du kyste non kératinisé est un phénomène osmotique, sécrétoire et lymphatique selon Toller. Dans le kératokyste, ces mécanismes ne sont pas évidents et ils expliquent l'expansion surtout par l'activité collagénolytique avec un potentiel de croissance différent. Cliniquement cela expliquerait le fait que l'on voit peu de réaction corticale osseuse pour les kératokystes par rapport aux kystes odontogéniques et que le kératokyste contient moins de protéines dans sa lumière.

APPLICATIONS CLINIQUES

DIAGNOSTIC

Toller et Kramer⁽¹²⁾ ont précisé les avantages de la cytologie exfoliatrice et du dosage du contenu en protéine des kératokystes. Sur une série de 56 kératokystes, ils ont trouvé des squames à la cytologie dans 47 cas et un contenu en protéine abaissé par rapport aux kystes non kératinisant dans 45 cas. Leur conclusion: pour un kyste donné, en utilisant à la fois la cytologie et l'évaluation du contenu en protéine, on arriva pratiquement à la certitude du diagnostic. Ceci est d'une signification

clinique importante pourvu qu'on utilise les deux méthodes dans chaque cas. Cette procédure permet entre autre de distinguer le kératokyste de l'améloblastome, tumeur qui a été rapportée avec plus de fréquence chez les porteurs de N.B.S.

TRAITEMENT

Lurie et al.⁽¹⁸⁾ citant les études, rapporte un taux de récurrence de 34% avec énucléation des kératokystes. Il propose d'utiliser la technique de scintigraphie osseuse. Ils utilisent des composés de phosphate marqué au technetium 99m pour déterminer leur marge de résection.

Persson⁽¹⁹⁾ citant Bramley, suggère l'énucléation des kératokystes simples et peu étendus et l'excision en bloc si multiloculés. Le kératokyste plus extensif est le mieux traité selon lui par énucléation suivie d'une greffe osseuse immédiate. Si le kératokyste a percé la plaque corticale osseuse, il propose de réséquer les tissus mous environnants pour éviter la récurrence.

Rayne⁽²⁰⁾ est beaucoup plus conservateur et suggère la marsupialisation suivie de l'énucléation. Selon lui cette méthode offre moins de récurrence que l'énucléation seule. Il ne donne pas justification physiopathologique pour ce traitement habituellement réservé aux kystes simples. Il suggère de suivre le patient attentivement avec radiographies de contrôle aux six mois.

Attenborough⁽²¹⁾ citant un cas de récurrence après une vingtaine d'années, croit que la période habituelle de contrôle post-opératoire de cinq à sept ans doit être étendue presque indéfiniment. Les raisons majeures de récurrence sont bien résumées: potentiel cellulaire: mitose plus rapide, agressivité et caractéristique immunologique différentes; présence de kystes satellites issus de la lame dentaire (débris de Serres), donc potentiel multifocal; difficultés chirurgicales: friabilité de la capsule, accès limités à la lésion; essaimage (spillage) des tissus

Tableau II TRAITS DU N.B.S Selon (1) ET (2)				
HABITUELS	FRÉQUENTS			
	gynécologique endocrinien	orbites oculaires	S.N.C.	Squelettique
Kératokystes (65-75 %)	Fibromes ovariens	Cataracte	Hydrocéphalie	Côtes bifides
Tumeurs basocellulaires (50 %)	Fibrosarcomes ovariens	Chalazion	Retard mental variable	Scoliose
	Hypogonadisme	Glaucome	Calcification de la faux du cerveau	Thorax déformé
Dyskératose palmoplantaire (60 %)	Cryptorchidisme	Strabisme	Calcification du tentorium cérébelleux	Différent de Sprengel
RARES	Diminution pilosité faciale	Hypertélorisme	Calcification des apophyses clinoides	Genu valgus
	Gynécomastie			Hallux valgus Syndactylie Bosses frontales Prognathisme Côtes cervicales
Améloblastomes Aspect marfanoides Médulloblastome Pseudohypoparathyroïde.				

TYPE	% (KÉRATOKYSTES)
Primordial	44.4
Latéral péri-dentaire	24.4
Non-classifié	12.3
Résiduel	11.9
Globulo-maxillaire	8.9
Dentigère	8.5
Selon Brannon, prévalence de kératinisation dans divers types de kystes.	

environnants, dû à l'invasion des tissus mous. La fréquence accrue à l'angle et à la branche montante de la mandibule prédispose à la perforation du cortex lingual et envahissement du plancher de la bouche; Résistance de l'hôte (non prouvée).

CARACTÉRISTIQUES FACIALES

Gorlin en premier⁽¹⁾ avait noté chez plusieurs individus atteints de B.N.S., une augmentation du périmètre crânien (60 cm au plus chez l'adulte), liée à une proéminence frontale et bitemporo-pariétale. Une base du nez élargie donne au porteur du syndrome une apparence hypertélorique, malgré que la distance inter-pupillaire et inter-canthale peut être normale.

Par contre Dahl et al.⁽²³⁾ dans une étude céphalométrique poussée de douze cas, démontrent une hypertélorisme orbitaire avec comme conséquence augmentation de la distance inter-canthale et inter-pupillaire. Ils retrouvent la proéminence frontale et glabulaire chez la plupart des cas, proéminence qui vient en partie du développement exagéré du sinus frontal. La distance sellanasion est ainsi augmentée sans que la base du crâne ne soit augmentée.

Le maxillaire est dans les limites normales. La mandibule par contre démontre un développement exagéré et un angle gonial ouvert pour donner une allure prognatique. Il est à remarquer que le faciès serait d'apparence plus prognatique si ce n'était de la proéminence glabulaire et de l'angle gonial ouvert qui tendent à diminuer cette impression. Le canal dentaire serait dans une position rapprochée par rapport au rebord inférieur de la mandibule. La hauteur verticale du procès alvéolaire mandibulaire serait augmentée secondairement au changement morphologique de la mandibule et donnerait un overbite diminué.

Terminons en soulignant que plusieurs de ces caractéristiques morphologiques, soit préminence glabulaire, hypertélorisme, nez élargi, prognatisme, peuvent toutes être retrouvées dans le syndrome de Marfan.

CONCLUSION

Gorlin et al.⁽¹¹⁾ ont déjà mentionné la coïncidence rare d'un aspect marfanoïde avec un B.N.S. Un exemple frappant a été présenté d'un cas typique de B.N.S. qui a présenté longtemps l'allure marfanoïde avant de développer les traits caractéristiques diagnostiques du B.N.S.

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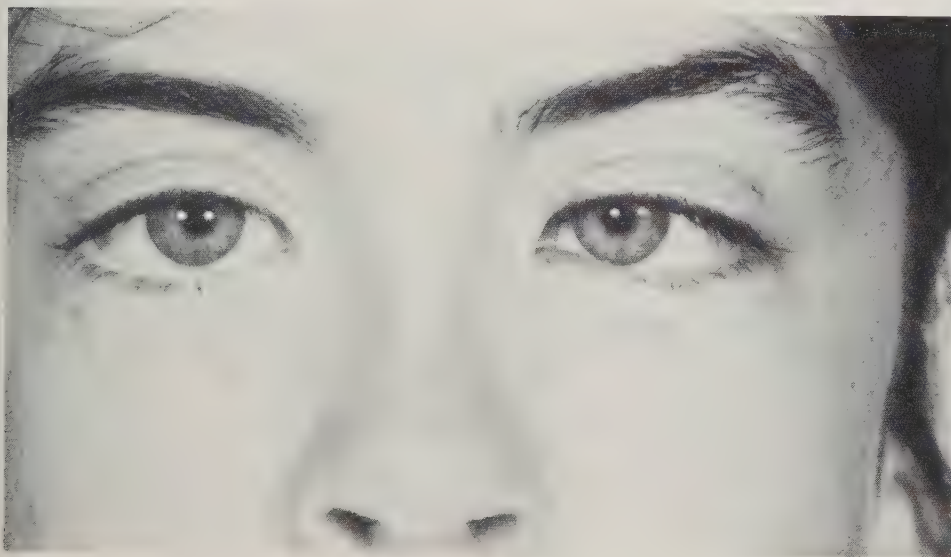


Fig. XI



Fig. XII

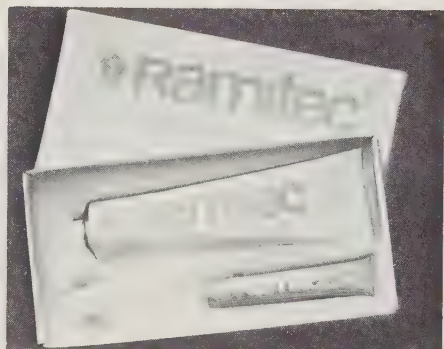
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- L'auteur aimerait remercier les docteurs Guy Maranda, D.D.S., F.R.C.D.(C) et Rénald Morency, M.D., F.R.C.P.(C) pour les conseils précieux apportés lors du présent ouvrage ainsi que Renée Beaulieu pour la dactylographie et la mise en page.
- Daniel Forget**, dmd Résident II en Chirurgie buccale et maxillo-faciale, Hôpital de l'Enfant-Jésus, Québec.

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Announcements

We urge readers to confirm meeting dates with the contact listed with each announcement.

Canada

Canadian Dental Association, 1980 National Convention, Halifax, Nova Scotia, July 13-16, 1980. Contact: Dr. T.D. Ingham, Nova Scotia Dental Association, P.O. Box 604, Halifax, N.S. B3J 2R7.

L'Association Dentaire Canadienne, Congrès national 1980, Halifax, Nouvelle-Écosse, 13-16 juillet 1980. Pour renseignements: Dr. T.D. Ingham, Association Dentaire de la Nouvelle-Écosse, B.P. 604, Halifax, N.-É. B3J 2R7.

May/mai

Canadian Academy of Periodontology Annual Meeting, Chateau Champlain Hotel, Montreal, Que., May 16-19, 1980. Contact: Dr. J.P. Masson, Drummond Medical Building, 1414 rue Drummond, Suite 1110, Montreal, Que. H3G 1W1.

Annual Convention of the College of Dental Surgeons of Saskatchewan, Yorkton, Saskatchewan, May 22-24, 1980. Contact: Dr. H.J. Large, 10 Dunlop Block, Yorkton, Sask. S3N 0K4.

British Columbia College of Dental Surgeons 1980 Convention, Hyatt Regency Hotel, Vancouver, May 25-28, 1980. For further information, please contact: Venue West Ltd., 1704 — 1200 Alberni Street, Vancouver, B.C. V6E 1A6, phone: (604) 681-5226.

June/juin

The Royal College of Dentists of Canada, Annual meeting and convocation, Toronto, Ontario, June 19-21, 1980. Contact: Dr. J.E. Speck, 170 St. George Street, Suite 614, Toronto, Ont. M5R 2M8.

The Ontario Society of Preventive Dentistry, Seminar & Workshop, Constellation Hotel, Toronto, Ontario, June 20-22, 1980. Contact: Dr. Brock Rondeau, 648 Huron Street, Ste. 201, London, Ont. N5Y 4J8.

July/juillet

Canadian Academy of Restorative Dentistry Annual Scientific Sessions, Chateau Halifax, Halifax, Nova Scotia, July 11-12, 1980. Contact: Dr. D.C.T. MacIntosh, Scientific Chairman, 200 Medical Arts Building, 5880 Spring Garden Rd., Halifax, N.S. B3H 1Y1.

Canadian Academy of Prosthodontics, Halifax, Nova Scotia, July 11-12, 1980. Contact: Dr. B.M. Jackson, secretary-treasurer, 22-22 Water St. South, Kitchener, Ont. N2G 4K4.

Canadian Academy of Endodontics 1980 Annual Meeting, Chateau Halifax, Halifax, Nova Scotia, July 12-13, 1980. Contact: Dr. Tom Larder, 5991 Spring Garden Road, Halifax, N.S. B3H 1Y6.

The 1980 Annual Meeting & Scientific Sessions of the Canadian Association of Orthodontists, Chateau Halifax, Halifax, Nova Scotia, July 13-16, 1980. Contact: Dr. Wayne Barro, 599 Portland Street, Dartmouth, N.S. V2W 2M5. Phone: (902) 434-2177.

Canadian Dental Hygienists' Association, 1980 Convention, Halifax, Nova Scotia, July 14-16, 1980. Contact: Mrs. Kim McGrail, 3 Beech Street, Bedford N.S. B4A 1T1.

1980 AHA/CHA Convention & Exhibition, Montreal, Quebec. Convention headquarters will be Queen Elizabeth Hotel for C.H.A. and headquarters for A.H.A. will be Place Bonaventure & Chateau Champlain. Exhibition headquarters will be Place Bonaventure, July 28-31, 1980. Contact Mr. Paul Brown or Mrs. Joan Roche, phone: (613) 238-8005.

September/septembre

Canadian Dental Association Board of Governors Meeting, Four Seasons Hotel, Ottawa, September 26-27, 1980.

November/novembre

Toronto Academy of Dentistry, 1980 Winter Clinic, Royal York Hotel, Toronto, Thursday November 27, 1980. Contact: Academy of Dentistry, 234 St. George Street, Toronto, M5R 2P2. Phone: (416) 967-5649.

The Canadian Association of Oral and Maxillofacial Surgeons 1980 Clinical Symposium on Current Concepts in Temporomandibular Joint: Diagnosis and Management, Harbour Castle Hilton, Toronto, Ontario, November 1-3, 1980. Contact: Dr. S.J. Levitz, #212-77 Queensway West, Mississauga, Ont. L5B 1B7.

International

May/mai

Academy of Denture Prosthetics, Daytona Beach, Florida, U.S.A., May 18-23, 1980. Contact: Dr. William R. Laney, Dept. of Dentistry, Mayo Clinic, Rochester, MN 55901, U.S.A.

American Academy of Craniomandibular Disorders, Chicago, May 22-24, 1980. Contact: Dr. William Danzig, 2021 Ygnacio Valley Road, Walnut Creek, CA 94598, U.S.A.

Tenth International Meeting on Dental Implants and Transplants, Bologna, Italy, May 23-25, 1980. Contact: Professor G. Muratori, Gruppo Italiano Studi Implantari Sezione Congressi, Via S. Gervasio 1, I-40121, Bologna, Italy.

American Academy of Pedodontics, San Francisco, California, U.S.A., May 24-27, 1980. Contact: Miss Merle C. Hunter, 211 E. Chicago Ave., Chicago, IL 60611, U.S.A.

June/juin

Eighth International Conference on Oral Biology, Tokyo, Japan, June 1-3, 1980. Its theme will be: Oral Disease Prevention — its implications and applications. An interesting study tour program in Japan, China and Thailand is being arranged in connection with the conference. Contact: Dr. George S. Beagrie, University of British Columbia, Faculty of Dentistry, 2075 Westbrook Place, Vancouver, B.C. V6T 1W5.

The 58th General Session of the International Association for Dental Research, Royal Hotel, Osaka, Japan, June 5-8, 1980. Contact: Yojiro Kawamura, chairman I.A.D.R. Organizing Committee, School of Dentistry, Osaka University, 4-3-48 Nakanoshima, Kita-ku, Osaka, Japan.

Symposium on the Prevention in Stomatology, Dolny Kubin, Czechoslovakia,

June 5-7, 1980. Contact: Prim. MUDr. V. Tázandlák, Dunz — Dolný Kubin, Nemocničná ul. 4, 026 14 Dolný Kubin, Czechoslovakia.

International Congress on Implantology and Biomaterials in Stomatology, Kyoto, Japan, June 9-10, 1980. Contact: Prof. H. Kawahara, International Congress of Implantology and Biomaterials in Stomatology, c/o Kyoto International Conference Hall, Takaragaike, Sakyo-ku, Kyoto 606, Japan.

The Marin County Dental Society, French Polynesia (Four Islands), June 15-17, 1980. Contact: Dr. James H. McCray, 231-B Flamingo Road, Mill Valley, CA 94941, U.S.A.

Seventh International Conference on Oral Surgery, Trinity College, Dublin, Ireland, June 23-26, 1980. Contact: Professor I.A. Findlay, Chairman, Organizing Committee, Seventh International Conference on Oral Surgery, 12 Pembroke Park, Dublin 4, Ireland.

86th Meeting of the American Dental Society of Europe, Stratford-upon-Avon Hilton, Stratford-upon-Avon, England, June 24-28, 1980. Contact: The Secretary, Dr. Brian J. Parkins, 57 Portland Place, London W1N 3AH, England.

Fifth International Congress of Dento-Maxillo-Facial Radiology, Portland, Oregon, U.S.A., June 28-July 2, 1980. Contact: Dr. Walter H. Fox, 1400 Mill Street, Eugene, OR 97401, U.S.A.

The Academy of General Dentistry (AGD), Chicago, 28th Annual General Meeting being held at Town & Country Hotel, San Diego, California, U.S.A., June 28-July 2, 1980. Contact: Ann McCarry Kilkuskie, phone: (312) 440-4300.

July/juillet

Fifth Congress of the International Association of Dentistry for the Handicapped, Jerusalem, July 6-11, 1980. Contact: Secretariat, Fifth Congress of the International Association of Dentistry for the Handicapped, P.O. Box 3473, Tel Aviv, Israel.

British Dental Association Centenary Meeting, London, England, July 10-11, 1980. Contact: R.B. Allen, secretary, British Dental Association, 64 Wimpole Street, London W1M 8A1, England.

Israel Dental Association's International Meeting, Tel Aviv, Israel, July 13-19, 1980. Contact: Dr. S. Perlmutter, Israel Dental Association, 49 Bar-Kochba Street, Tel Aviv, Israel.

Fourth International Symposium on the Prevention & Detection of Cancer, Wembley Conference Centre, London, England, July 26-31, 1980. Contact: Fourth International Symposium on Prevention & Detection of Cancer, Room 1909, 375 Park Avenue, New York, N.Y. 10022, U.S.A.

August/août

Fourteenth Annual Black Hills Dental Seminar, Rapid City, South Dakota, U.S.A., August 1-7, 1980. Contact: Ms. Jean C. Cory, P.O. Box 1580, Rapid City, SD 57709, U.S.A.

New Zealand Dental Association Jubilee Conference 1905-1980, Dunedin, New Zealand, August 25-29, 1980. Contact: The Conference Secretary, P.O. Box 647, Dunedin, New Zealand.

September/septembre

Fédération Dentaire Internationale, 68th Annual World Dental Congress, Hamburg, Germany, September 2-7, 1980. Contact: Allan's Travel Service Ltd., Ste. 804, 56 Sparks St., Ottawa, Ont. K1P 5A9.

International Association for Orthodontics, Reno, Nevada, September 3-7, 1980. Contact: Ms. Joanna Carey, 645 N. Michigan Avenue, Chicago, IL 60611, U.S.A.

American Association of Oral and Maxillofacial Surgeons, San Francisco, September 5-9, 1980. Contact: Mr. Bernard J. Degen 11, Suite 930, 211 East Chicago Avenue, Chicago, IL 60611, U.S.A.

Federation of Prosthodontic Organizations, San Francisco, September 5-9, 1980. Contact: Mr. Eric Bishop, Suite 1636, 211 East Chicago Avenue, Chicago, IL 60611, U.S.A.

Federation of Prosthodontic Organizations, Chicago, Illinois, U.S.A., September 15-16, 1980. Contact: Mr. Eric M. Bishop, Suite 1636, 211 East Chicago Ave., Chicago, IL 60611, U.S.A.

Genoa International Fair — 10th Exponential, Genoa, September 24-27, 1980. Contact: Fiera di Genova, P. le J.F. Kennedy, 16129 Genoa.

American Society of Psychosomatic Dentistry and Medicine, San Francisco, September 25-28, 1980. Contact: Mr. Leo Wollman, 2802 Mermaid Avenue, Brooklyn, NY 11224, U.S.A.

October/octobre

Third National Convention and III International Conference of Oral Health, Lima, Peru, October 1-4, 1980. Contact: Dr. Gilberto Dominguez, Av. Benavides 264-902, Lima 18, Peru, South America.

The American Academy of Implant Dentistry, 29th Annual Scientific/Educational Program, New Orleans, Louisiana, U.S.A., October 7-11, 1980. Contact: The American Academy of Implant Dentistry, 515 Washington Street, Abington, Mass. 02351, U.S.A. Phone: (617) 871-3691.

International College of Dentists Annual Session, New Orleans Hilton, October 8-13, 1980. The U.S.A. Section Convocation and Banquet, Saturday October 11, 1980. Reservations may be made by sending a cheque for \$25 per person to the International College of Dentists, 3138 Commodore Plaza, Miami, FL 33133, U.S.A.

American Society of Dentistry for Children, New Orleans, October 9-11, 1980. Contact: Ms. Dorothy J. McCord, Suite 920, 211 East Chicago Avenue, Chicago IL 60611, U.S.A.

Eighth International Uruguayan Dental Congress, Second Buccal-Maxillofacial Congress of Cono Sur, and Second Periodontal Week of Rio Plata, Montevideo, Uruguay, October 12-18, 1980. Contact: Secretaria, Avda. Liberador Brigadier Gral. Lacalleja 1464-Piso 13, Montevideo, Uruguay.

American Academy of Gnathologic Orthopedics, Williamsburg, Virginia, October 21-26, 1980. Contact: Dr. Laren W. Teutsch, 4124 Farnam Street, Omaha, NE 68131, U.S.A.

November/novembre

National and International Dental Meeting, Colegio de Dentistas de Chile, Avda. Santa Maria No. 1990, Santiago, Chile. Prevention in different levels and specialties. November 23-26, 1980. Contact: Dr. Victor Daniels, P.O. Box 252 V., Santiago, Chile.

Send Announcements to:
Envoyez les avis à:
CDA/L'ADC
1815 Alta Vista Dr.,
Ottawa, Ont. K1G 3Y6

Offices and Practices

BRITISH COLUMBIA — Five year old family practice for lease. Located in the Fraser Valley, 35 miles from Vancouver. Phone: (604) 530-4011.

BRITISH COLUMBIA — **Invermere.** Large family preventive practice for sale, \$110,000. Home of Calgary's recreation centre in majestic Rockies, situated on beautiful Lake Windermere and home of Panorama Ski area. One of the nicest designed and decorated offices available in N.A. with four operatories overlooking lake and mountains. Two finished in Truth System on ground floor in new building. Excellent working atmosphere with a full load of friendly patients and excellent staff. Gross approx. \$200,000. 3½ day week; Associate, 2½ day week; both with 1½ months off. Returning to school for graduate work.

BRITISH COLUMBIA — **Sunny Okanagan.** Family practice for sale in new medical building. Bright attractive well-designed office, approx. 1,000 sq. ft. Two operatories, third wired and plumbed; lab; private office; reception area and waiting room. For information phone: (604) 493-4437 or 767-2850.

THE UNIVERSITY OF ADELAIDE

AUSTRALIA

invites applications for appointment to the

CHAIR OF ORAL PATHOLOGY AND ORAL SURGERY

The University is seeking an outstanding person, with appropriate qualifications and clinical experience, to provide academic leadership in the teaching and research activities of the Department. A dental qualification registrable in South Australia is essential.

The Department of Oral Pathology and Oral Surgery is located within the Dental School of The University of Adelaide which is situated in the Dental Department of the Royal Adelaide Hospital.

SALARY: \$A35,654 per annum with provision for superannuation. In addition to the basic salary the Professor will receive, on account of his registrable dental qualification, a clinical loading at the rate of \$A2,500 per annum.

FURTHER INFORMATION: including the Formal Terms and Conditions of Appointment, the provisions of Departmental Government and details required in an application, is available from the Registrar of the University or from the Secretary-General, Association of Commonwealth Universities (Appts.), 36 Gordon Square, London, WC1H 0PF. Additional information about matters such as teaching arrangements, facilities and research interests in the Department may be sought from the Dean of the Faculty of Dentistry.

APPLICATIONS in duplicate, giving the particulars listed in paragraph 9 of the statement should reach the Registrar of The University, G.P.O. Box 498, Adelaide, South Australia, 5001, not later than 30 June, 1980.

BRITISH COLUMBIA — **Vancouver.** For sale: Fast growing, preventive-oriented dental practice; two chairs; low overhead; very good net. Excellent as a starter practice or satellite practice as investment would be minimal. Prime location in downtown Vancouver. Phone: (604) 734-2016 or 669-4114.

BRITISH COLUMBIA — **Vancouver.** Pedodontic practice for sale. Four chairs fully equipped with bay concept. Thorough recall system. Available summer 1980. Reply to CDA Box Number 1986.

BRITISH COLUMBIA — **Vancouver Island.** Family practice for sale. Bright, attractive, two operator office in modern building. Equipment nearly new. Area experiencing rapid economic and population growth. Pacific playground offers mild winters and great salt-chuck fishing. Reply to CDA Box Number 1978.

BRITISH COLUMBIA — **Victoria.** Busy general practice along with small dental building. Space and practice suitable for two practitioners. This is a worthwhile but costly package. Would consider sale of practice separately with long term lease of premises. Reply to CDA Box Number 1979.

ALBERTA — Practice for sale in a high income community near Calgary. Mild winter weather makes good skiing. Plenty of other recreational activities in the area. Two operatories equipped, with room for a third. Other rooms include lab, private office and a spacious reception area. Hospital privileges available. Reply to CDA Box Number 1983.

ALBERTA — **Central.** Large preventive family practice for sale or lease. Well-established office with three operatories, central suction, nitrous oxide and air-conditioning. Present staff wishes to remain. Hospital privileges available. Excellent hunting and fishing nearby. Owner retiring because of ill health. Reply to CDA Box Number 1949.

ALBERTA — **Calgary.** If you wish to live in Calgary, here is an opportunity to purchase a quality dental practice. There are three operatories, fully equipped with all the modern conveniences. Located in south Calgary in a large new shopping centre. There is room for further expansion when required. This office was designed for ease of patient and staff traffic flow. Some of the facilities include a panelipse, patient education room, staff room, large waiting room, hygiene room, and plush private office. Enquiries welcome. Please contact me by phone at: (403) 278-1402 or write to: #250-100, Anderson Road, S.E., Calgary, Alta. T2J 3V1.

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DIRECTOR

— DENTAL AUXILIARY SCHOOL —

JAMAICA

Applications are invited from Registered Dental Surgeons for the post of DIRECTOR Dental Auxiliary School — Kingston, Jamaica.

The School currently trains School Dental Nurses and Dental (Chairside) Assistants with an annual intake of 20 - 21 and 15 - 20 respectively. The School Dental Nurse's course is of a duration of two (2) years and the Dental Assistant's course of a duration of six (6) months.

The duties will include curriculum development, programming, teaching primarily children's dentistry, administration and clinical activities.

The applicant should have qualified for six (6) years or more with at least 2 - 3 years experience in the management of a similar or comparable training programme.

Salary will be in the scale J\$12,914 x 480 — 13,874 per annum plus allowances as follows:

Scarcity J\$3,000 per annum

Subsidised housing accommodation is provided.

Three (3) year Contracts are available with 25% gratuity payable on salary earned and Passages to a limit of five (5) persons will be provided.

The successful candidate would be expected to assume duties at the earliest possible time.

Application should be sent to —

Permanent Secretary
Ministry of Health
10 Caledonia Avenue
Kingston 5
Jamaica W.I.

ALBERTA — Edmonton. Excellent opportunity. For sale: Well-established preventive practice in modern downtown professional building. Two operatories, private office and lab. The waiting room, reception area and hygienist are shared with another dentist. Low overhead. Owner leaving province and practice. Available in May. For further information please phone: (403) 453-2777 evenings.

ALBERTA — Edmonton. High gross practice for sale. Two fully equipped ultra-modern operatories. Pelton & Crane chairs, Dental-Eze truth system (left handed can be converted). Share reception area, Panelipses, lab, staff room, patient education room and hygienist room with two other dentists. Phone: (403) 465-0996 weekdays.

MANITOBA — Portage La Prairie. Busy rural general practice for sale. Two modern operatories located in Medical/Dental Building. Good patient load on active recall. One hour drive west of Winnipeg and big city amenities. Contact: (204) 857-7343 (business) or 857-4309 (residence).

MANITOBA — Winnipeg. Office space for lease in new building with modern dental facility designed for three dentists and presently occupied by two well-established dentists with demand for third. In addition to shared space and facilities there are four operatories and a lab available. This is an opportunity to establish a good practice without paying good will. Contact: Dr. G.L. Funk, 230 Henderson Highway, Winnipeg, Man. R2L 1L9. Phone: (204) 667-8382.

MANITOBA — Winnipeg. Modern general practice in excellent location. Current year: gross \$250,000, net \$120,000. Present owner wants more time for other interests. Ideal for conscientious, capable dentist in 30's or 40's. Price \$55,000. Possession date is flexible. All replies in strictest confidence. Reply to CDA Box Number 1989.

MANITOBA — Winnipeg. Well established practice for sale. Two operatories fully equipped with very new and modern equipment. Third fully plumbed and wired. Laboratory, reception area and waiting room. Central airconditioning. Close to downtown on main thoroughfare. Very high gross and low overhead. Reply to CDA Box Number 1975.

NORTHERN MANITOBA — Well established practice in the Norman Region. Gross over \$200,000. Five operatories with room for two more. Practice may be bought with or without building. Available July 1. Ultra modern environment. Reply to CDA Box Number 1988.

ONTARIO — Exceptional opportunity to purchase a fine preventive family practice well-established with high earnings and excellent personnel. 45 minutes north of Toronto in farming community with drawing area of 10,000. Two modern equipped operatories with third partially set up. Reply to CDA Box Number 1925.

ONTARIO — Very busy practice for sale, located in a beautiful, year round recreational area, 110 miles east of Toronto. Hospital privileges available. Yearly gross: \$160,000+ based on 32-hour week. Price: \$39,000. Available September 1980. Reply to CDA Box Number 1980.

ONTARIO — London area. For sale: Ten year old, two chair, ground floor practice with room for expansion. Situated on Main Street and Highway 8. Sacrifice for immediate possession due to health reasons. Phone collect: (519) 527-1442.

ONTARIO — Midland. Large general practice for sale due to ill health. Contact: G. Teskey, 361 King Street, Midland, Ont. L4R 3K7. Phone: (705) 526-7886.

SOUTHWESTERN ONTARIO — Exceptional opportunity. Excellent preventive practice at reasonable price in Woodstock (population 27,000 plus) Ont. Office is 600 sq. ft.; two operatories (10' x 10'), lab, reception area, darkroom and two piece washroom; modern modular equipment. Possibilities for expansion in future, also purchase of shares in building with good equity build up. Rent at present \$350.00 per month, includes air-conditioning and hydro. Reason for sale: going back to university for post-grad program. If interested call: Dr. O. Tucker, (519) 539-9161.

QUÉBEC — Montréal. Bureau à louer dans une clinique dentaire du Boul. St-Joseph, face au métro. Redécoré, salle de repos, salle de filières et modèles, laboratoire etc. Très avantageux pour tout dentiste car dépenses d'installation sont minimales. Répondez à: Dr. Serge Carle, 415 est Boul. St-Joseph, Montréal, P.Q. H2J 1J6. Téléphone: (514) 849-3706.

Petites Annonces

NEW ZEALAND. Two surgery general dental practice for sale in provincial city, Northland New Zealand. Also large modern architect-designed house, on ten acres of coastal land with private beach, 1/2 hour from city. Property \$160,000. Package deal with practice \$200,000. Reply to CDA Box Number 1982.

Associateship Available

BRITISH COLUMBIA — Nanaimo. Associateship available for paedodontist or dentist with considerable experience limited to children, to join thriving two-man practice with flexible hours. Possible option to buy in. Reply to Arbutus Dental Facility Group, 170 Wallace Street, Nanaimo, B.C. V9R 5B1.

BRITISH COLUMBIA — Vancouver (Surrey area). Oral surgery associate with recent residency background in all phases of oral and maxillofacial surgery. Future partnership possibilities in an active diverse growing practice. N.D.E.B. or ability to sit local specialty board essential. Send resume to: CDA Box Number 1977.

SASKATCHEWAN — Weyburn. Associateship leading to full partnership in modern, well established dental practice with one other dentist, hygienist, and dental nurse. Eight modern operatories, fully equipped, orthopan, hospital privileges available. Town of 10,000, drawing area 70,000. Excellent hunting, fishing and recreation nearby. Call or write: Dr. Don Dufour, 142 3rd Street N., Weyburn, Sask. S4H 0W2. Phone: (306) 842-2382.

MANITOBA — Opportunity available for full-time associate in modern newly renovated office. Work in a relaxed atmosphere, providing total preventive dental care utilizing four-handed dentistry with experienced efficient staff. Salaries and fees negotiable. Good potential for future partnership or full ownership. For further information, reply to CDA Box Number 1987.

ONTARIO — Kingston. Associate required for established dental office with one other dentist. Full-time or part-time basis. Please reply to CDA Box Number 1973.

MINISTRY OF HEALTH DENTAL HYGIENISTS

Competition 79:1853-22 \$17,820 — \$20,412

The Community Health Programs, offers excellent opportunities at VARIOUS LOCATIONS for career-minded hygienists to participate in community educational, motivational and preventive pre-school and school dental programs. Duties include teaching in classrooms, conducting dental inspections, compiling statistical data, providing necessary follow-up services and performing other duties as a team leader in area concerned.

Qualifications — A recognized university diploma in dental hygiene or equivalent and preferably some experience subsequent to graduation. May be required to drive own car on expenses, or a government car.

Return applications IMMEDIATELY.



**Province of British Columbia
Public Service Commission**

Positions
are open to both
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Obtain applications from,
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544 Michigan Street, Victoria, B.C., V8V 1S3

ONTARIO — London. Separate adult and family practice. 700 sq. ft. area fully equipped, air-conditioned, in small professional building. Core area. Share costs. Option to buy. Reply to CDA Box Number 1984.

SOUTHWESTERN ONTARIO — Associate required for modern six operator practice with partnership potential; full or part-time. Reply to CDA Box Number 1959.

QUEBEC — Sherbrooke. Periodontist needed for large, multi-specialty group practice in ultra-modern dental centre. Situated in one of the finest skiing and boating regions. An outstanding practice with no initial investment or equipment purchase is offered. Write: Box 1553, Sherbrooke, Que. J1H 5M4.

Opportunities Available

NORTHWEST TERRITORIES — Full-time and part-time dentists are required in the N.W.T. at Inuvik and Frobisher Bay. These salaried positions offer a challenging and varied dental experience and provide an opportunity to work with northern residents in the Canadian Arctic and to travel to outlying communities on regular field trips. Dental equipment is provided at no cost, and housing is available at subsidized rates. For further information please contact: Dr. Michael Welch, Bag Service 7777, Yellowknife, N.W.T. or phone collect: (403) 873-7025.

BRITISH COLUMBIA — Richmond. Excellent opportunity for an experienced dentist to join a progressive, preventive oriented, family practice in Vancouver suburb. Preference given to experienced persons with high clinical and ethical standards. Please reply to CDA Box Number 1971.

BRITISH COLUMBIA — We are offering a unique opportunity to a mature dentist to share our busy family practice situated in a picturesque alpine environment. The economic climate is excellent, supported by lumber, hydro-electric, railroad and tourist industries, (heli-skiing and alpine recreation unlimited.) Our group practice configuration allows for flexibility of work patterns, learning and consulting opportunities and reduced stress. Please call: Drs. Harold Prussin or Eric Ruby for details. (604) 837-5149.

BRITISH COLUMBIA — Office and part time practice: Pender Harbour, sunshine coast. Modern office and some equipment available at modest rent to dentist willing to provide regular part time service. Excellent prospect for retiree in area of unlimited boating, fishing and recreational potential. The Pender Harbour clinic is a modern health facility with a full time doctor, nurse and receptionist, with office facilities for social services and public health. Contact: Pender Harbour & District Health Centre Society, P.O. Box 308, Madeira Park, B.C. V0N 2H0.

BRITISH COLUMBIA — Cassiar. Locum or associate wanted for six weeks, three months, or longer. Spectacular scenery; excellent hunting; fishing, etc. Apply to: Dr. B. Rauch, c/o Medical Dental Clinic, Cassiar, B.C. V0C 1E0.

MANITOBA — A city serving an area of over 100,000, requires an orthodontist to work independent of, but in conjunction with, a growing group

FOR SALE

— 29,000 cards of sets of denture teeth, mostly porcelain.

Top quality — priced to sell.
(213) 925-3765.

Petites Annonces

practice. The need exists for a full-time specialist. A variety of interesting options regarding the relationship with the group and/or other practitioners exists. Reply to CDA Box Number 1963.

MANITOBA — Winnipeg. Oral surgeon certified to practise in Manitoba required for a busy practice. Object partnership. Please submit photo to CDA Box Number 1970.

ONTARIO — Dentist required for underserved area. Ministry of Health grant available. Mara Medical Centre, Modern professional building located in Brechin, Ontario, 70 miles north of Toronto on Lake Simcoe. Reply to: Mara Medical Centre Board, P.O. Box 130, Brechin, Ont. L0K 1B0.

ONTARIO — Toronto. Paedodontist required for busy Paedodontic practice in north Metropolitan Toronto. Opportunities available for partnership. Position available immediately. Applicant must be certified to practise in Ontario. Reply in strict confidence to CDA Box Number 1912.

QUÉBEC — Dentistes demandés. Cabinet moderne, 10 pièces. Montréal Métropolitain, près du métro. Aucune mise de fonds. Possibilité d'association. Vacances été et hiver. Avenir assuré. Traitement professionnel. Pas de dépense. Honoraires maximum selon votre capacité de travail, votre polyvalence, votre confiance personnelle. Futur assuré. Revenu assuré Réponse postale pour rendez-vous: L'Association Dentaire Canadienne, C.P. 1981 CDA, 1815 Alta Vista Drive, Ottawa, Ont. K1G 3Y6.

QUEBEC — Montreal. Associateship or office space for lease in a modern preventive oriented dental office. Apply in confidence to: Place Sherbrooke Dental Group Ltd., 1010 Sherbrooke Street W., #202, Montreal, Que. H3A 2R7.

UNIVERSITÉ LAVAL — A full time academic position in restorative dentistry is available. The successful applicant must hold a DDS or DMD and M.Sc. (or equivalent) with major in fixed prosthodontics. Duties will include pre-clinical and clinical teaching in French primarily at the undergraduate level. Other duties normally performed by a full-time university

position (including research) may be attributed. Candidates must be eligible for licensure by the Order of Dentists of Quebec enabling him/her to teach clinically and enjoy consulting and private privileges. A temporary license would be granted in the interim. Salary and rank are commensurate with qualifications and experience and are based on a collective agreement. Please send letter of application, curriculum vitae and three letters of recommendation before June 1st, 1980 to: Dr. Laurent Dufour, Associate Director, Ecole de médecine dentaire, Université Laval, Québec, Canada, G1K 7P4.

NOVA SCOTIA — A four year old community owned dental clinic with a built-in apartment for residence on the beautiful Cabot Trail on Cape Breton Island requires the services of a dentists. Area population of about 4,900, and clinic is associated with two physicians. Prime site for golfing, fishing, skiing and many other outdoor sports. Contact: P.O. Box 607, 276 George Street, Sydney, N.S. B1P 6H7.

Opportunities Wanted

BRITISH COLUMBIA — Mature general dentist, aged 32, hard working, desires full time associateship or salaried position in Vancouver or vicinity. Other position and any other area in British Columbia and Saskatchewan considered. Available July 1980. Reply to CDA Box Number 1990.

ONTARIO — Dentist seven years in private practice, experienced in all phases of general dentistry, looking to re-locate to eastern Ontario, preferably Ottawa area. Interested in associateship/partnership or group practice. Reply to CDA Box Number 1973.

ONTARIO — Certified dental assistant with two years working experience, is seeking full-time, permanent employment beginning in October, in the Toronto area. Sufficient notice would be appreciated to allow me to resign from my present position, and relocate. Reply to CDA Box Number 1985.

Miscellaneous

FOR SALE: Dispersalloy. 340 Troy ounces regular pellet, six grains each. Three years old. Regular cost less 20%. Reply to: Dr. Barrie Bourne, Box 1108, Rocky Mountain House, Alta. T0M 1T0. Phone: (403) 845-2795 after 6.00 p.m.

WANTED — Used Ritter Commander Dental Unit. Write: Dr. J. Gris, 465 Wallinger Avenue, Kimberley, B.C. V1A 1Z6. Phone: (604) 427-4722.

NEWFOUNDLAND PUBLIC SERVICE DENTAL HYGIENIST II

Dental Health Division, Department of Health, St. John's.

DUTIES: Prepares Dental Health Education material; provides instruction in the school system; attends Preventive Clinical sessions; and performs clinical duties as required.

QUALIFICATIONS: Experience in Dental Health; eligible for registration as a Dental Hygienist with the Newfoundland Dental Board; graduation from an approved School of Dental Hygiene.

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CONFIDENCE TO:

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July 13-16, 1980
Halifax, Nova Scotia

National Congrès Convention National

Canadian Dental Association L'Association Dentaire Canadienne

13-16 juillet 1980
Halifax, Nouvelle-Écosse

REGISTRATION FORM

PLEASE PRINT OR TYPE

Name _____

Address _____

Receipt will be sent to the above. Please use separate forms if individual receipts are required. You may photocopy this form.

ROLE: Please indicate your principal role in CDA, CDHA, CDNAA, e.g., Member, President of Prosthodontic Section, Chairman of Council on Education, etc., after your name.

DENTISTS: Name (For name tag) _____ ROLE _____
CDA Member & Foreign Dentists \$145. before or \$165. after June 1, 1980
Canadian Non-CDA Member \$225. before or \$250. after June 1, 1980

\$ _____

INCLUDES: Scientific Sessions, Exhibits, Sunday opening ceremonies and chowder party, Monday night lobster party, Monday and Tuesday luncheons, Wednesday: Beef-'n-Beer

DENTAL HYGIENISTS: Name (For name tag) _____ ROLE _____
CDHA Member \$75 before or \$105. after June 1, 1980
Non-CDHA Member \$100. before or \$130. after June 1, 1980.

\$ _____

INCLUDES: Scientific Sessions, Exhibits, Sunday opening ceremonies and chowder party, Monday night lobster party, Monday (President's luncheon) Tuesday evening President's reception, Wednesday: Beef-'n-Beer.

DENTAL TECHNICIANS: Name (For name tag) _____ ROLE _____
\$30.00

\$ _____

INCLUDES: Scientific Sessions, Exhibits, Sunday opening ceremonies and chowder party, Wednesday: Beef-'n-Beer

DENTAL NURSES AND ASSISTANTS: Name (For name tag) _____ ROLE _____
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\$ _____

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South Shore of Nova Scotia with lunch, antique shopping and sightseeing _____

Monday night lobster party, additional admission tickets \$25.00 each

\$ _____

Tuesday night President's Dinner and Dance \$40.00 per couple

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CANCELLATION: Full registration fee refundable up to June 13, 1980.
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TOTAL

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MAIL TO: CDA National Convention Phone: (902) 424-2248

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Halifax, N.S. B3H 3J5

July 13-16, 1980
Halifax, Nova Scotia

National Congrès Convention National

Canadian Dental Association

L'Association Dentaire Canadienne

13-16 juillet 1980
Halifax, Nouvelle-Écosse

FORMULAIRE D'INSCRIPTION

PRIÈRE D'ÉCRIRE EN LETTRES MOULÉES OU À LA MACHINE.)

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Adresse _____

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FONCTION: À la suite de votre nom, on vous prie d'indiquer votre fonction principale au sein de l'ADC, de l'ACHD ou de l'ACGMAD, e.g.:
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Canadiens non membres: \$225. avant ou \$250. après le 1er juin 1980

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PRIVILÈGES: les conférences scientifiques, les salles d'exposition, les cérémonies d'ouverture et la dégustation de soupes aux poissons le dimanche, le dîner de homard le lundi, le déjeuner les lundi et mardi, la fête "Beer'n Beef" le mercredi

HYGIENISTES DENTAIRES: Nom (pour l'étiquette d'identité) _____ FONCTION _____
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\$ _____

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TECHNICIENS DENTAIRES: Nom (pour l'étiquette d'identité) _____ FONCTION _____
\$30.00

\$ _____

PRIVILÈGES: les conférences scientifiques, les salles d'exposition, les cérémonies d'ouverture et la dégustation de soupes aux poissons le dimanche, la fête "Beer'n Beef" le mercredi

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FONCTION _____
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PRIVILÈGES: les conférences scientifiques, les salles d'exposition, les cérémonies d'ouverture et la dégustation de soupes aux poissons le dimanche, le déjeuner les lundi et mardi, le petit-déjeuner du mercredi, l'assemblée annuelle, la visite du port, la fête 'Boeuf et bière' le mercredi

CONJOINTS: (autres que les dentistes et que les adjoints) Nom (pour l'étiquette d'identité) _____
\$55. avant ou \$60. après le 1er juin 1980

\$ _____

PRIVILÈGES: les conférences scientifiques, les salles d'exposition, les cérémonies d'ouverture et la dégustation de soupes aux poissons le dimanche, le déjeuner et le défilé de mode le lundi, le dîner de homard, une visite guidée le mardi (indiquez votre choix:)

excursion, visite des boutiques et déjeuner dans l'Annapolis Valley

ou excursion, visite des antiquaires et déjeuner sur la côte Sud de la Nouvelle-Écosse

Billets additionnels pour: le dîner de homard le lundi: \$25.00 chacun

\$ _____

la soirée du président (dîner et bal): \$40.00 le couple

\$ _____

CANCELLATION: Les frais d'inscription sont remboursables en entier jusqu'au 13 juin 1980.
Après cette date, 75 pourcent des frais sont remboursables.

TOTAL

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July 13-16, 1980
Halifax, Nova Scotia

National Congrès Convention National

Canadian Dental Association

L'Association Dentaire Canadienne

13-16 juillet, 1980
Halifax, Nouvelle-Écosse

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No. of Adults _____ Children _____ in room.

Nombres d'adultes _____ d'enfants _____ par chambre.

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Hygienist	☐	Hygiéniste	☐
Assistant	☐	Assistant(e)	☐
Technician	☐	Technicien(ne)	☐

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Indiquer 5 Hôtels par ordre de préférence

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Apt. ☐
App. ☐

1. _____
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3. _____
4. _____
5. _____

Do you wish your reservation guaranteed? Yes _____ No _____ Unless guaranteed, reservation will only be held until 6 pm. Room allocation will be made only to convention registrants. Advance payment will be required upon receipt of confirmation. Do not enclose accommodation payment with this form. Do not include accommodation payment in registration cheque.

Désirez-vous garantir votre réservation? Oui _____ Non _____ Sans garantie, votre réservation n'est sûre que si vous arrivez à votre hôtel avant 18 heures. Les chambres seront attribuées seulement à ceux qui s'inscriront au congrès. Dès que votre réservation sera confirmée, le paiement en sera exigé. On vous prie de ne pas joindre le paiement de votre chambre à celui de votre inscription au congrès.

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Barrington Inn (Delta)	42.	48.	—	—	-housekeeping units available
Lord Nelson	35.	38.	—	—	chambre avec cuisines
+Citadel Inn	43.50	46.50	—	—	disponibles
Carlton Hotel	—	24.-28.	—	50.	@reserved for auxiliaries
+St. Mary's University Housing	10.	16.	30.	—	réservés aux auxiliaires
*+Keddy's Motor Inn	28.	36.-40.	—	—	+pool-piscine
@+Holiday Inn-Halifax	40.	46.	—	—	
*Holiday Inn-Darhmouth	31.50	—	—	—	
*Wandlyn Inn	32.	40.	—	—	
*+Sea King Motel	24.	29.	—	—	

DEADLINE FOR MAKING ADVANCE RESERVATIONS: June 1, 1980

DATE LIMITE POUR LES DEMANDES DE RÉSERVATIONS: 1er juin, 1980

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Retourner ce formulaire de réservation au secrétariat du congrès:

Accommodation chairman: Dr. George Clark

Directeur de logement: (902) 422-5967

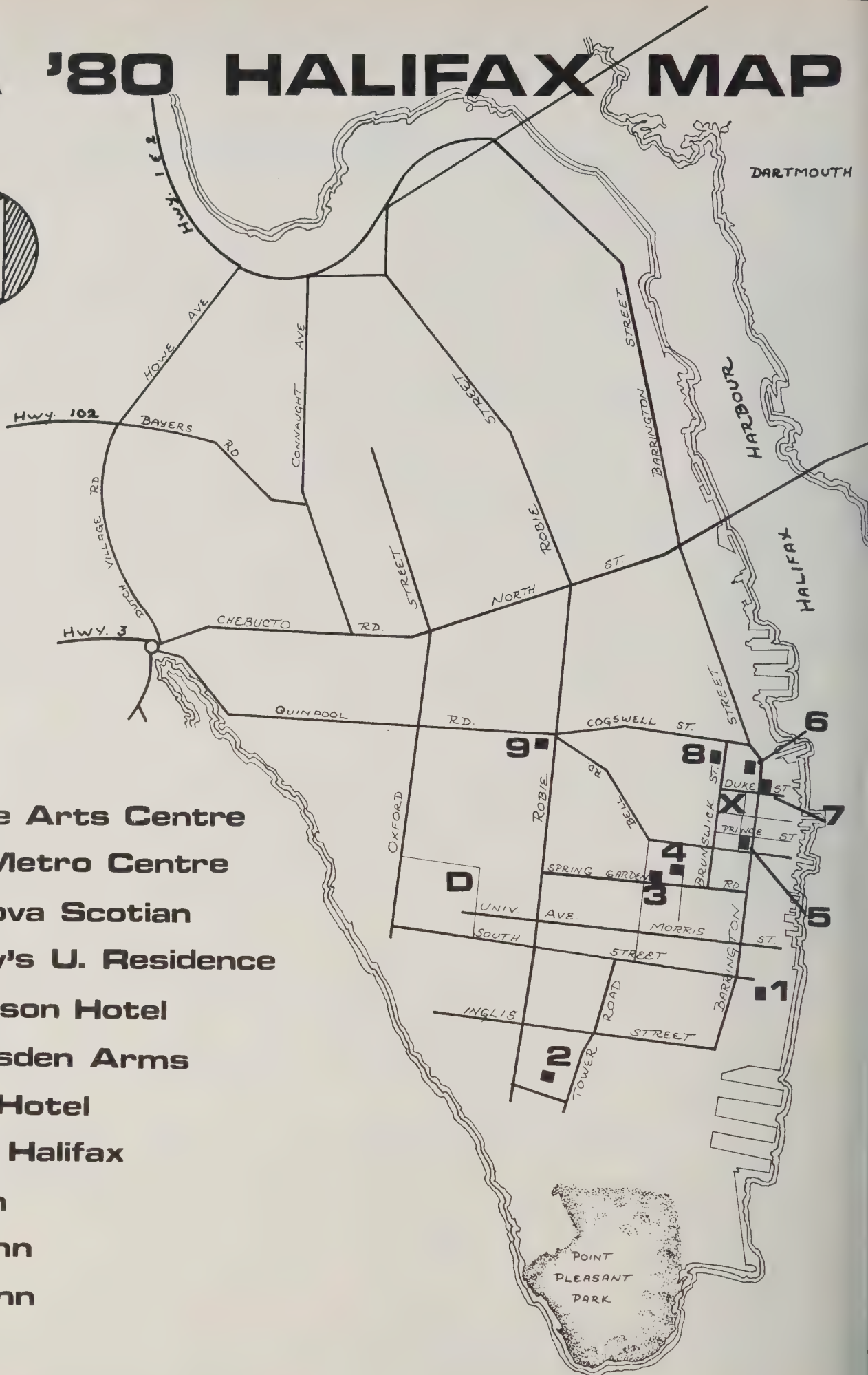
CDA National Convention

Continuing Education in Dentistry

Dalhousie University

Halifax, N.S. B3H 3J5

CDA '80 HALIFAX MAP



- D Dalhousie Arts Centre**
- X Halifax Metro Centre**
- 1 Hotel Nova Scotian**
- 2 St. Mary's U. Residence**
- 3 Lord Nelson Hotel**
- 4 The Dresden Arms**
- 5 Carlton Hotel**
- 6 Chateau Halifax**
- 7 Delta Inn**
- 8 Citadel Inn**
- 9 Holiday Inn**

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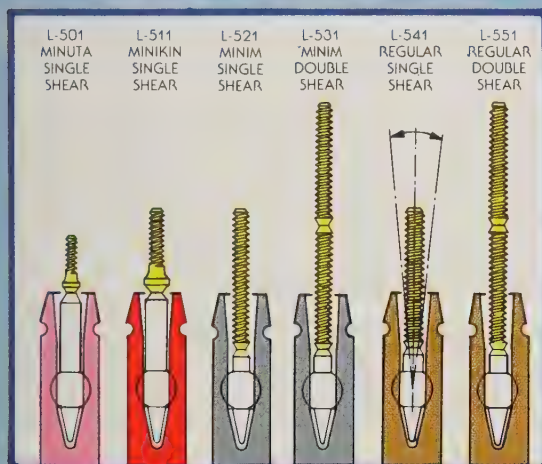
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Vol.46 No.6

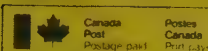
Canadian Dental Association June
Dental Association 1980

Journal

de l'Association juin
Dentaire 1980
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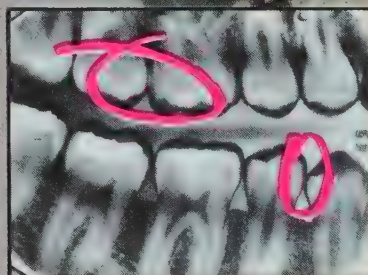
Naturally, regular brushing, regular check-ups and treat-

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For further information, write Xylitol Information Centre, P.O. Box 490, Station A, Scarborough, Ontario M1K 5C3.



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But dentistry was changing; and if you were serious about your work you were beginning to recognize the merits of preventive dentistry ...which meant teaching the public that dentistry was more than "pulling the tooth that hurts." It was about this time that the Colgate company introduced Colgate toothpaste.

As people learned that keeping teeth healthy required day-to-day care, they learned to care for them with Colgate.



By the turn of the century most dentists were no longer common tradesmen, but educated professionals; and the Canadian Dental Association was founded so they could share their skill, their knowledge and their concern for the integrity of the profession. Although more and more toothpastes were now being introduced, Colgate's reputation as an effective dentifrice was already well-established. More and more dentists were recommending Colgate to their patients.



As the century progressed, many biological and technical advances were made in the field of dentistry, one of the most significant of which was the increasing use of fluoride to reduce the incidence of cavities. The first fluorides to be used by dentists were simple in composition: sodium fluoride and stannous fluoride. But the Colgate company was developing its own improved fluoride, MFP (sodium monofluorophosphate). Research showed that this fluoride reacts with the tooth enamel to form fluorapatite*, which makes the tooth more resistant to decay. Tests also showed that staining of teeth, which can be a problem with stannous fluoride, isn't a problem with MFP. Reformulated Colgate with MFP was so effective that it was one of the first toothpastes to receive official recognition from the Canadian Dental Association†. And Colgate** with MFP is still one of the most effective toothpastes in the fight against cavities today.



*Ericsson, Y., The mechanism of the monofluorophosphate action on hydroxy apatite and dental enamel, Acta Odont, Scand., 21, 341-358 (1963).

† Colgate Toothpaste contains sodium monofluorophosphate, which is, in our opinion, an effective decay preventive agent, and is of significant value when used in a conscientiously applied program of oral hygiene and regular professional care.

Canadian Dental Association.

Colgate-Palmolive Canada

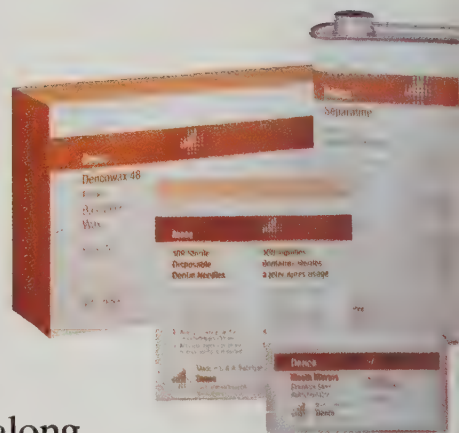


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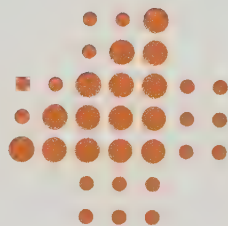
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Journal

de l'Association
Dentaire
Canadiennejuin
1980

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Editorial

345 Teaching Practice Management

Dr. Al MacLeod, who runs a group practice in Halifax, Nova Scotia, would like to see dental students given more information on practice management. "The pendulum of change has swung too far towards the scientific side of instruction," he says.

Letters

349 Think again, CDA!

CDA's brief to the Hall Commission "depicts the activities of our profession in an unfortunately narrow manner" says a Journal reader.

350 UIC compromises

Changes in rules will help dental hygienists, Lloyd Axworthy, Minister, Employment and Immigration, tells CDA president, Dr. Clyde Covit.

In the News

353 Effective management a valuable art

Most dentists have not been trained in effective personnel management techniques. The basic problems are outlined and some solutions are suggested.

355 CDA president honored

Dr. Clyde Covit recently received the Alpha Omega — Mount Royal Dental Society "Man of the Year" Award.

359 Tax talk

Ontario dentists got a look at tax shelters during their annual meeting recently.

359 Pamphlet racks for sale

Order new pamphlets and display them on a new rack — just \$12.95.

361 Council on Student Affairs — update

Past student governor, Dr. Gary Cousens, outlines how the Council works.

Convention 1980

Halifax, Nova Scotia

368 Dentistry for the elderly

Dentists must work to gain the confidence of their elderly patients, Dr. A.S. Franks from Birmingham, England, will tell Convention delegates.

368 Welcome to Halifax . . .

from the co-chairmen of the Convention — Dr. Terry Ingham and Dr. John Christie.

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369 From the President

Dr. Clyde Covit welcomes you to the 1980 CDA Convention.

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Dr. R.D. Oles says part of this book is good and part could be improved.

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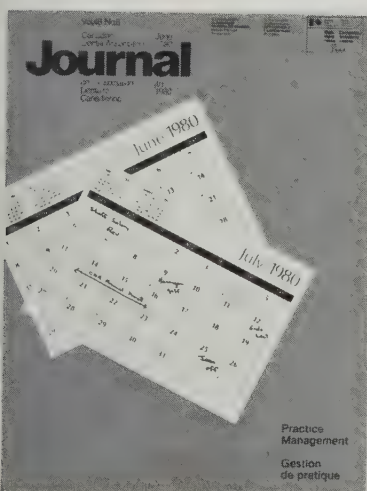
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Practice
management

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ISSN 0709-8936

Journal

de l'Association
Dentaire
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1980

Editorial

La gestion d'une pratique dans l'enseignement —

Le Dr Al MacLeod gère une pratique collective à Halifax, en Nouvelle-Écosse, et il désire qu'on renseigne davantage les étudiants dentaires sur la gestion d'une pratique. Nous avons accordé beaucoup trop d'importance à l'aspect scientifique dans les programmes d'études, a-t-il affirmé.

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350 Espoir pour les hygiénistes dentaires —

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Exécutif

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Président désigné

Dr Gilbert Utas

Président sortant

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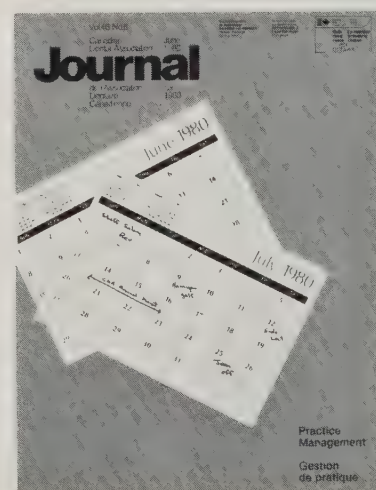
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Le représentant aux É.U.: Medical Media, Wm. McCausland, Ed. Goedeke, Box 101, Pitman, NJ 08071. Téléphone: 609-589-5454.

La direction du Journal ne partage pas nécessairement les opinions qu'expriment ses collaborateurs à moins que l'Association Dentaire Canadienne ne les ait adoptées officiellement.

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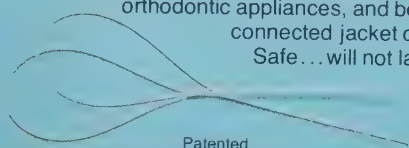
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[†]Beiswanger, B.B., et al.: J. Dent. Child. 45:137, 1978



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TEACHING PRACTICE MANAGEMENT

Dentistry is often described on formal occasions as being both "an art and a science". Successful management of a dental practice requires an understanding of both aspects. Since the majority of graduates make general practice a life career, an understanding of the "art" of dentistry is important. Over the years, our dental schools have taught Practice Management to students through classroom courses. Unofficially the students augmented classroom information by talking with general practitioner instructors, individuals who not only taught clinical courses in the dental school but also maintained a full-time private practice.

To keep up with the explosion of scientific knowledge in the last 30 years, dental schools have increased the number of specialists teaching clinically. Although it is naturally beneficial for students to see specialists in action, the trade-off is that students have less contact with dentists whose roots are firmly based in private practice.

A mix of general practitioners and specialists is necessary in dental schools. By increasing the proportion of specialists, the pendulum of change in dental school has swung too far towards the scientific side of instruction. I would like to see it return to a more central position so that the valuable scientific knowledge we impart to students is complemented by a larger portion of information about private practice than is now the case.

Dr. Al MacLeod,
chairman,
Journal Editorial Board

LA GESTION D'UNE PRATIQUE DANS L'ENSEIGNEMENT

Souvent, quand on veut décrire la médecine dentaire d'une façon formelle, on la désigne et comme un art et comme une science. Pour gérer une pratique dentaire avec succès, il faut comprendre les deux parties de cette définition.

Vu que la majorité des diplômés dentaires embrassent la carrière de praticien général, il importe pour eux de savoir ce que "l'art" de la médecine dentaire signifie. Au cours des années, nos écoles dentaires ont enseigné aux étudiants comment gérer une pratique. En discutant de façon informelle avec des praticiens généraux qui non seulement leur donnaient des cours cliniques mais qui, aussi, dirigeaient une pratique privée à temps complet, les étudiants ont accumulé des connaissances sur le sujet.

Cependant, pour ne rien perdre des connaissances scientifiques qui se sont rapidement multipliées durant les 30 dernières années, les écoles dentaires ont augmenté le nombre de spécialistes qui donnent des cours cliniques. Bien que les étudiants tirent naturellement profit de l'expérience des spécialistes, il s'ensuit malheureusement qu'ils ont moins de contacts avec les dentistes qui se sont solidement établis dans la pratique privée.

Il faudrait qu'il y ait autant de praticiens généraux que de spécialistes dans les écoles dentaires. En augmentant le nombre des spécialistes, les écoles dentaires insistent beaucoup trop sur l'aspect scientifique dans les programmes de

formation. J'aimerais que l'équilibre soit rétabli de manière à ce que le bagage des connaissances scientifiques que nous offrons aux étudiants conservent toute sa valeur, mais qu'il soit complété par des connaissances sur la gestion d'une pratique qui soient plus amples que celles que nous leur donnons présentement.

Dr Al MacLeod,
président,
Conseil de Rédaction
du Journal

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Prescribing information on page 00

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Product Information

Action: Ibuprofen has demonstrated anti-inflammatory, analgesic and antipyretic activity in animal studies designed to specifically demonstrate these effects. Ibuprofen has no demonstrable glucocorticoid effect.

Pharmacokinetics: Following a single 200 mg dose of ibuprofen in humans, useful blood levels were demonstrable in 45 minutes and still present in six hours but at barely detectable levels. Peak levels occurred at approximately one hour after ingestion. Levels were lower when taken in conjunction with food.

Ibuprofen is rapidly metabolized and eliminated in the urine. The excretion of ibuprofen is virtually complete 24 hours after the last dose. The serum half-life of ibuprofen is 1.8 to 2 hours. There is no evidence of drug accumulation or enzyme induction.

Ibuprofen has been found to be less likely to cause gastrointestinal bleeding in doses usually used than is acetylsalicylic acid.

Clinical trials in man have shown activity of a dose of 200-1800 mg of ibuprofen daily to be similar to that of 6 grams of acetylsalicylic acid daily.

Indications and Clinical Uses: Motrin (ibuprofen) is indicated for the treatment of rheumatoid and osteoarthritis. Motrin is also indicated for the relief of mild to moderate pain, accompanied by inflammation, in conditions such as musculo-skeletal trauma and post-anal extraction. Motrin is also indicated for the relief of pain associated with dysmenorrhea.

Contraindications: Ibuprofen should not be used in patients who have previously exhibited hypersensitivity to it, or in individuals with the syndrome of nasal polyps, angioedema and bronchospastic reactivity to acetylsalicylic acid or other nonsteroidal anti-inflammatory agents. (See WARNINGS).

Ibuprofen should not be used during pregnancy, in nursing mothers or in pediatric patients because its safety under these conditions has not been established.

Warnings: Anaphylactoid reactions have occurred in patients with known A.S.A. hypersensitivity (see CONTRAINDICATIONS).

Gastrointestinal ulceration and gastrointestinal bleeding, sometimes severe, have been reported in patients receiving ibuprofen. Peptic ulceration, perforation, or severe gastrointestinal bleeding can have a fatal outcome, and although few such reports have been received with ibuprofen, a cause and effect relationship has not been established. Ibuprofen should be given under close supervision to patients with a history of upper gastrointestinal tract disease.

Precautions: Blurred and/or diminished vision, scotomata, and/or changes in colour vision have been reported. If a patient develops such complaints while receiving ibuprofen, the drug should be discontinued and the patient should have an ophthalmologic examination.

Fluid retention and edema have been reported in association with ibuprofen, therefore, the drug should be used with caution in patients with a history of cardiac compensation or renal disease.

Ibuprofen, like other nonsteroidal anti-inflammatory agents, can inhibit platelet aggregation but the effect is qualitatively less and of shorter duration than that seen with acetylsalicylic acid. Ibuprofen has been shown to prolong bleeding time (but within the normal range) in normal subjects. Because this prolonged bleeding effect may be exaggerated in patients with underlying hemostatic defects, ibuprofen should be used with caution in patients with intrinsic coagulation defects and those on anticoagulant therapy.

Patients on ibuprofen should be cautioned to report to their physicians signs or symptoms of gastrointestinal ulceration or bleeding, blurred vision or other eye symptoms, skin rash, weight gain, or edema.

When ibuprofen is added to the treatment program of patients who have been on prolonged corticosteroid therapy, and it is decided to discontinue this therapy, the corticosteroid should be tapered slowly to avoid exacerbation of disease or adrenal insufficiency.

Septic meningitis has been reported in connection with ibuprofen therapy in patients with systemic lupus erythematosus. Such patients may also develop hypersensitivity reactions to ibuprofen such as fever, rash or abnormal liver function more often than those with other drugs. Caution should therefore be exercised when considering ibuprofen therapy for patients with systemic lupus erythematosus.

Drug Interactions

Coumarin-type anticoagulants - Several short-term controlled studies failed to show that ibuprofen significantly altered prothrombin times or a variety of other clotting factors when administered to individuals on coumarin-type anticoagulants. However, because bleeding has been reported when ibuprofen and other nonsteroidal anti-inflammatory agents have been administered to patients on coumarin-type anticoagulants, the physician should be cautious when administering ibuprofen to patients on anticoagulants.

Animal Studies: Animal studies show that A.S.A. given with non-steroidal anti-inflammatory agents including ibuprofen results in a net decrease in anti-inflammatory activity with increased blood levels of the non-A.S.A. drug. Single dose availability studies in normal volunteers have failed to show an effect of A.S.A. on ibuprofen blood levels. Relative clinical studies have not been done.

Adverse Reactions: The following adverse reactions have been noted in patients treated with ibuprofen:

Note: Reactions listed below under Causal Relationship Unknown are those which occurred under circumstances where a causal relationship could not be established. However, in these rarely reported events, the possibility of a relationship to ibuprofen cannot be excluded.

Gastrointestinal: The adverse reactions most frequently seen with ibuprofen therapy involve the gastrointestinal system.

Incidence 3 to 9%: nausea, epigastric pain, heartburn.

Incidence 1 to 3%: diarrhea, abdominal distress, nausea and vomiting, indigestion, constipation, abdominal cramps or pain, fullness of the gastrointestinal tract (bloating or flatulence).

Incidence less than 1%: gastric or duodenal ulcer with bleeding and/or perforation, gastrointestinal hemorrhage, melena, hepatitis, jaundice, abnormal liver function (SGOT, serum bilirubin and alkaline phosphatase).

Central Nervous System:

Incidence 3 to 9%: dizziness.

Incidence 1 to 3%: headache, nervousness.

Incidence less than 1%: depression, insomnia.

Causal relationship unknown: paresthesias, hallucinations, dream abnormalities.

Dermatologic:

Incidence 3 to 9%: rash (including maculopapular type).

Incidence 1 to 3%: pruritus.

Incidence less than 1%: vesiculobullous eruptions, urticaria, erythema multiforme.

Causal relationship unknown: alopecia, Stevens-Johnson syndrome.

Special Senses:

Incidence 1 to 3%: tinnitus.

Incidence less than 1%: amblyopia (blurred and/or diminished vision, scotomata and/or changes in colour vision). Any patient with eye complaints during ibuprofen therapy should have an ophthalmologic examination (see PRECAUTIONS).

Causal relationship unknown: conjunctivitis, diplopia, optic neuritis.

Metabolic:

Incidence 1 to 3%: decreased appetite, edema, fluid retention. Fluid retention generally responds promptly to drug discontinuation (see PRECAUTIONS).

Hematologic:

Incidence less than 1%: leukopenia and decreases in hemoglobin and hematocrit.

Causal relationship unknown: hemolytic anemia, thrombocytopenia, granulocytopenia, bleeding episodes (e.g. purpura, epistaxis, hematuria, menorrhagia).

Cardiovascular:

Incidence less than 1%: congestive heart failure in patients with marginal cardiac function, elevated blood pressure.

Causal relationship unknown: arrhythmias (sinus tachycardia, sinus bradycardia, palpitations).

Allergic:

Incidence less than 1%: anaphylaxis (see CONTRAINDICATIONS).

Causal relationship unknown: fever, serum sickness, lupus erythematosus syndrome.

Endocrine:

Causal relationship unknown: gynecomastia, hypoglycemic reaction.

Renal:

Causal relationship unknown: decreased creatinine clearance, polyuria, azotemia.

Symptoms and Treatment of Overdose: A nineteen month old child weighing 12 kg ingested from 2800 to 4000 mg and presented with apnea, cyanosis and responded only to painful stimuli. Oxygen and parenteral fluids were given and at 12 hours she appeared completely recovered. Two other children (10 kg each) ingested 1200 mg of ibuprofen each and there were no signs of acute intoxication or late sequelae. A 19 year old male who had ingested 8000 mg of ibuprofen reported dizziness, and nystagmus was noted. He recovered with no reported sequelae after parenteral hydration and three days' bed rest.

In cases of acute overdose, the stomach should be emptied by vomiting or lavage, though little drug will likely be recovered if more than an hour has elapsed since ingestion. Because the drug is acidic and is excreted in the urine, it is theoretically beneficial to administer alkali and induce diuresis.

Dosage and Administration: *Rheumatoid arthritis and osteoarthritis:* The initial daily dosage in adults is 1200 mg divided into 3 or 4 equal doses. Depending on the therapeutic response, the dose may be adjusted downward or upward. The daily dosage should not exceed 2400 mg.

Maintenance therapy, once maximum response is obtained, will range from 800 to 1200 mg per day.

Mild to moderate pain associated with inflammation, dysmenorrhea: 400 mg repeated as required every 4 to 6 hours. The daily dosage should not exceed 2400 mg.

Children: Due to the lack of clinical experience, ibuprofen is not indicated for use in children under 12 years of age.

Supplied: 200 mg (yellow), 300 mg (white), 400 mg (orange) sugar-coated tablets and 600 mg (peach) film-coated tablets in bottles of 100 and 1000.

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Think again, CDA!

The Statement by the Canadian Dental Association to the Health Services Review Commission, March 5th, 1980, as published in the April, 1980 issue of the Journal, is a well-written document which for the most part presents our case appropriately. However, I believe that it depicts the activities of our profession in an unfortunately narrow manner.

I do not agree, as stated in the Recommendations section, that the CDA's overriding concern is the dental health of the Canadian public. Our overriding concern is, as it should be, the general well-being of the Canadian public. We certainly have the responsibility of specializing in the dental area but we must not give the impression that we are only interested in teeth.

Even when we wish to describe our area of special competence, it is important that we note our role in the maintenance of the oral health of our patients, not just their dental health. Members of our profession deal with a wide variety of disorders of the jaws and oral soft tissues, many of which are not related to teeth. We are in an excellent position to detect early malignancies of the oral regions, to cite one obvious example. There is no question that we dentists spend most of our time treating dental disorders but they are not our only concern.

The point made in the CDA Statement that dental caries and periodontal disease are the two most important oral diseases needs qualification. They are certainly the most common. However, the patient with advanced squamous cell carcinoma of the tongue might well consider his disorder more important than either.

I hope that the next time our As-

see page 350

UIC compromises

Dear Dr. Covit,

Thank you for your letter of March 26, 1980, regarding the minimum insurability provisions under the Unemployment Insurance Program.

I have noted your support for the position taken by the Canadian Dental Hygienists' Association. You may recall that I announced on April 16, 1980, that regulatory changes are contemplated with respect to the minimum insurability requirements under the Unemployment Insurance Program.

I am proposing 15 hours of work in a week, or one-fifth of the maximum insurable earnings, as the new

basis for insurability which should permit most dental hygienists to meet the minimum coverage requirements. I am, of course, prepared to listen to any further comments from interested organizations such as the Canadian Dental Hygienists' Association before taking any final decision in this matter.

I feel the proposed changes would be a great improvement over the current situation and would certainly be more equitable for dental hygienists.

Lloyd Axworthy,
Minister,
Employment and
Immigration

Lettres

Cher Dr Covit,

Merci pour votre lettre du 26 mars 1980 qui a pour objet les dispositions relatives aux normes minimales d'assurabilité du programme d'assurance-chômage.

J'ai pris note de l'appui que vous accordez à la position prise par l'Association canadienne des hygiénistes dentaires. Vous vous souviendrez que, le 16 avril 1980, j'ai annoncé que nous envisageons des changements au règlement touchant les normes minimales d'assurabilité du programme d'assurance-chômage.

Je propose 15 heures par semaine, ou un cinquième du maximum de la rémunération assurable comme nouvelle base d'assurabilité, ce qui devrait permettre à la plupart des hygiénistes dentaires de satisfaire aux normes minimales pour qu'ils deviennent admissibles

à l'assurance-chômage. Bien entendu, avant de prendre une décision finale à ce sujet, je suis prêt à écouter tout autre commentaire qui émanerait d'un organisme concerné comme l'est l'Association canadienne des hygiénistes dentaires.

Je pense que les changements proposés amélioreraient grandement la situation actuelle et seraient certainement plus équitables pour les hygiénistes dentaires.

Lloyd Axworthy,
Ministre de l'Emploi
et de l'Immigration

from page 349

sociation makes a public statement about our activities, it emphasizes that we are concerned about more than just Canadians' teeth, important as they are. Our profession deserves a broader image than that.

David G. Gardner, DDS, MSD,
Professor and Chairman,
Division of Oral Pathology,
University of Western Ontario.

Obituaries/ Nécrologies

BLATCHFORD, F.A., of Thunder Bay, Ontario. Died January 8, 1980. Graduated Royal College of Dental Surgeons, 1909.

LAROCHELLE, J. Léo, décédé septembre, 1978 à Québec, Québec.

MACNABB, Harvey C. died in February at the Ottawa Civic Hospital. He was 81 years old. Dr. MacNabb graduated from McGill University Faculty of Dentistry and practised in Montreal for 44 years. He served on the staff of the Montreal Children's Hospital, was an executive member of the Montreal Dental Club prior to his retirement in 1971 to Barryvale, Ontario.

MCKEOWN, George K. graduated University of Toronto, 1937. Died March 5. Dr. McKeown was president of his class in 1936-37 and Year Book editor in 1935-36. During the Second World War he served as a major in the Dental Corps. Until his retirement last year, he practised in Thunder Bay, Ontario.

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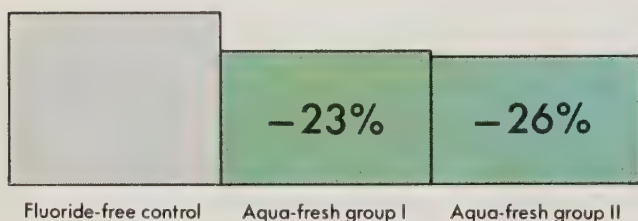


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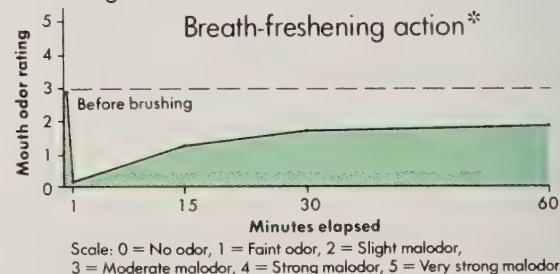
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**Double protection:
reduces caries
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Effective management a valuable art

Besides being able to deliver first class clinical care, a dentist today must also be skilled in personnel management. Most dentists, however, have not been trained to handle staff effectively. This article identifies some key problems in managing dental office employees and proposes several solutions.

BASIC PROBLEMS

Fees vs Wages — Usually dentists depend on fees for income while their employees earn set salaries. This can create conflict over how work is handled, becoming more apparent when dentists decide they "want to keep going" after finishing scheduled appointments. Such discord can seriously affect relations between dentists and their work group. Indirectly it can affect the quality of service to patients.

Work Proximity — Dental practice is unusual because the employer and employee constantly work in close physical proximity. This closeness can aggravate minor problems such as irritating mannerisms.

Anxious Patients — Besides carrying out demanding technical procedures, dental staff must face fearful patients regularly. Coping with these fears can easily drain an employee's emotions, making that employee vulnerable to inter-personal conflict in the office.

Limited Career Development — A career-minded nurse or teacher has the opportunity to eventually move into a supervisory position. A dental assistant or hygienist, however, does not have a similar opportunity. This career plateau can cause intense frustration; it may even cause a hygienist to leave dentistry entirely.

Absenteeism — Any one, or a combination of several, of the above problems can lead to absenteeism. Absence of one member of the staff

can totally disrupt the routine and places an unjust workload on other employees.

PRIMARY SOLUTIONS

Many of these problems can be prevented or eliminated with attention to the following areas.

Selective Hiring — Key characteristics dentists look for in new staff are training, experience and personal maturity. The first two can be acquired through time. The third characteristic, which cannot be easily acquired, is the most important. New employees must be mature if they are to work closely with others in a dental office and be supportive to patients.

Fixed Paydays — Staff may feel insecure about irregular wage payment — dependent on the whims of the dentist. This feeling can be reduced by ensuring that employees are paid at agreed time intervals and consistently on the same day (if possible, even at the same time of day).

Overtime Compensation — Assistants will be willing to work after-hours only if they know they will be rewarded for the extra work. The reward can be money, time off, or other privileges such as free dental

treatment or the opportunity to attend continuing education courses.

Sick Leave — The best method of coping with absenteeism is to offer incentives for not taking such leave. Additional money or extra vacation time are some incentives for employees not to take sick leave, especially when the workload is heaviest.

If an employee is sick, measures can be taken to prevent over-working remaining members of staff. Group practices may use a "floater", someone who "floats" between operatories, filling-in for absent staff. Solo practitioners may use a former employee on short notice, or share a floater with one or more solo colleagues.

SECONDARY SOLUTIONS

Besides ensuring working conditions are satisfactory, an effective employer should try to boost staff morale. This can be done in several ways.

Sharing Information — Office efficiency improves when employers make their staff aware of what is happening in the office. They can do so by telling them their intentions, asking their opinions and encouraging them

continued

CDA Retirement Savings Plan

Unit values of the Canadian Dental Association's Retirement Savings Plan stood as follows on

of March 31, 1980, stood as follows:	
Common Stock Fund	\$43.160
Fixed Income Fund	\$26.462
Guaranteed Fund	\$17.289
Balanced Fund	\$10.853
Total assets (market value) of the plan were \$34,437,010.	

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The previous month's figures, as

Total assets (market value) of the plan were \$33,739,257.

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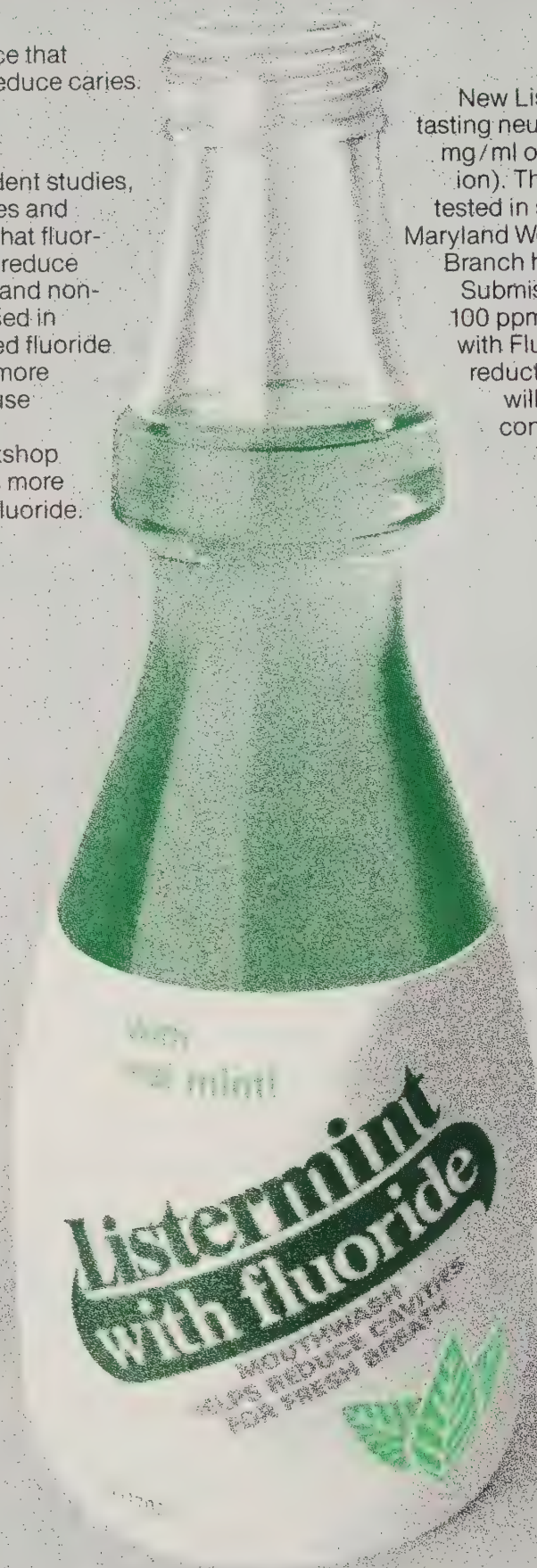
The Research

After reviewing more than 20 independent studies, the International Workshop on Fluorides and Dental Caries Reduction* concluded that fluoride mouthwashes (1) can significantly reduce caries experiences in both fluoridated and non-fluoridated communities (2) may be used in combination with other topically applied fluoride preventive measures (3) appear to be more effective with increased frequency of use and (4) are safe from age 6.

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*April 28th to May 1st, 1974. Co-sponsored by Department of Pedodontics, University of Maryland and by the Division of Dentistry, U.S. Department of Health, Education and Welfare. For a complete report on proceedings, write to Medical Department, Warner-Lambert (Canada) Limited, 2200 Eglinton Ave. East, Scarborough, Ontario M1K 5C9.

Personnel management

from page 353

to comment on office routine without being asked.

Encouraging Personal Growth —

Dentists can encourage personal growth in employees by delegating clinical and non-clinical tasks which they can legally perform. Delegation involves giving employees assignments to carry out without standing over them. Once mutual trust and respect are established, employees should then be allowed to initiate and perform such procedures on their own, at their own discretion. This ability to make responsible decisions on their own should help offset the frustration of limited career advancement.

Fostering Team Spirit —

The simplest way for members of a work group to develop a sense of team spirit is to meet socially. Staff meetings, birthday or going-away parties, festive celebrations, annual staff photographic sessions and inter-office sports matches are excellent opportunities for employees to get together. Socializing seems to work better when restricted to staff than when it includes people some employees may not know (eg. spouses). Also, the office or some neutral territory is a better place to get together than the home of the employer — it is less intimidating.

Caution — At any level of socializing, there is the inherent danger that the business relationship may turn into a personal one.

REWARDS OF GOOD STAFF MANAGEMENT

Staff enjoy the heightened sense of their own worth and therefore relate better to others in and outside, the work setting. Dentists benefit by receiving consistently high quality work from their employees; by having a low staff turnover; and by knowing that

the inevitable problems of running an office will be dealt with promptly, sometimes even without their knowledge. Dentists are then free to direct more of their own energy to effective clinical dentistry. The public also benefits. It's difficult to explain, but patients say they recognise a "happy" office when they see one. This could be very important in calming the fears of anxious patients.

SUGGESTED READINGS

Articles:

- 1 Drucker, P.F.: The effective decision. *Harvard Business Review* 45 (1): 92, 1967.
- 2 Greiner, L.F.: Patterns of organizational change. *Harvard Business Review* 45 (3): 119, 1967.
- 3 Herzberg, F.: One more time: How do you motivate employees? *Harvard Business Review* 46 (1): 53, 1968.

Books:

- 1 DuBrin, A.J.: The practice of supervision. Business Publications Inc., Georgetown, Ontario, 1980.
- 2 Napier, R.W. and Gershenfeld, M.K.: Groups: theory and experience Houghton Mifflin Co., Boston, Mass., 1973.
- 3 Olmsted, M.S. and Hare, A.P.: The small group. Random House, New York, N.Y., 1978.
- 4 Roethlisberger, F.J. and Dickson, W.J.: Management and the worker. Harvard University Press, Cambridge, Mass., 1970.
- 5 Sanford, A.C.: Human relations: theory and practice. Charles E. Merrill Publishing Company, Columbus, Ohio, 1973.

This article was prepared by Dr. Al MacLeod who runs a group practice in Halifax, Nova Scotia. Dr. MacLeod is also chairman of the Journal Editorial Board.

CDA President honored...



Dr. Clyde Covit, right, CDA president recently received the Alpha Omega Man of the Year Award. He is pictured with Dr. Stephen Miller, president, Alpha Omega Mount Royal Dental Society.

INSTRUCTIONS FOR CONTRIBUTORS

Previously unpublished articles, critical reviews of material on advances in dentistry and clinical reports are welcomed by the Journal of the Canadian Dental Association for consideration for publication. Material is accepted for use in the Journal on the understanding it is submitted solely to this publication.

SCIENTIFIC ARTICLES: should not exceed 2,500 words in length with a minimum number of illustrations, diagrams, photographs, tables or graphs. An average of 20 references is acceptable.

MAJOR REPORTS: are longer contributions dealing with diagnosis and treatment of dental disease, studies in education, clinical and laboratory research and other detailed investigations pertinent to dentistry and related fields.

CLINICAL REPORTS: are brief (up to 1,500 words) reports, case histories and clinical observations. References should be limited and a minimum of illustrations used.

OPINIONS: fully documented opinions (800 words or less) are welcome for publication at the discretion of the editor.

The above word count is based on the calculation of approximately 250 words typed double-spaced on 8½ X 11 paper.

MANUSCRIPTS: submit three (3) copies (original and two copies) to the editor, Journal of the Canadian Dental Association, 1815 Alta Vista Drive, Ottawa, Ontario, K1G 3Y6.

A covering letter and a summary of the submission must accompany each article. The full mailing address of the corresponding author must accompany the manuscript.

The editor reserves the right to edit manuscripts for stylistic consistency, clarity and conciseness. The corresponding author will receive a copy of the edited manuscript for checking prior to publication. Authors must include professional degrees, academic/hospital affiliations and appointments and are requested to submit a photograph of themselves for publication with the article.

Manuscripts must be typed, double-spaced on 8½ X 11 paper on one side of the page only. An abstract must accompany each manuscript.

ARTICLE TITLES: must be descriptive but concise and suitable for indexing.

REFERENCES: must be keyed to the text and numbered consecutively. Journal references must give the author's name, article title, abbreviated journal name, volume

number, first page number and last page number of article, year of publication:

1. Hechter, F.J. Symmetry and dental arch form of orthodontically treated patients. JCDA 44:173-184, 1978.

For books, give the author's name, book title, location and name of publisher, year of publication:

2. Kilpatrick, H.C. Work simplification in dentistry, ed. 2. Philadelphia, Saunders, 1964.

ILLUSTRATIONS: must be high quality and only professional quality drawings, charts and graphs should accompany manuscripts.

Color slides or negatives will not be accepted for publication.

Submit three (3) sets of photographs (black and white, glossy, 3" X 5"), drawings, radiographs, charts and graphs. Using a grease pencil ONLY, lightly write the name of the corresponding author and figure number on the back of each illustration and photograph. Indicate 'Top' of each illustration.

X-rays must be in the form of black and white glossy prints for successful reproduction.

Charts and graphs are an addition to the text and should be numbered in order of appearance in the manuscript. Each table should be typed on a separate page with title and footnotes.

LEGENDS: must be typed as a group on a separate page for all illustrations. Photomicrograph legends must specify magnification and stain.

PERMISSIONS AND WAIVERS: must accompany the manuscript. Waivers are mandatory for the publication of photographs of patients unless faces are masked to prevent identification. Waiver forms are available from the Journal of the Canadian Dental Association office in Ottawa.

Permission of the author and publisher must be obtained for use of previously published material quoted in the text and for use of previously published illustrations.

COSTS: will be levied if four-color illustrations are requested but most articles are published at no cost to the author.

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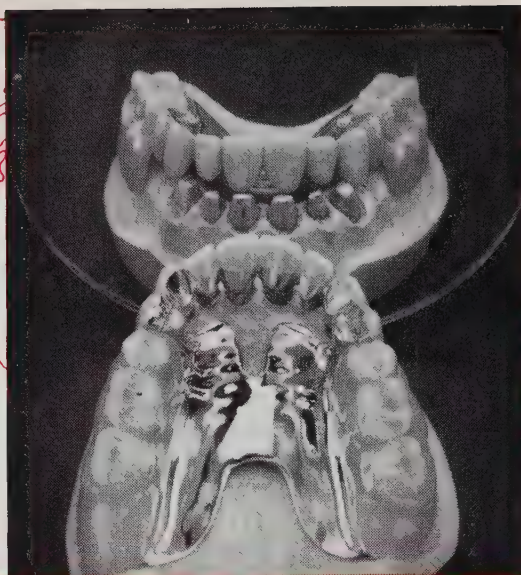
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Tax talk

Most Ontario dentists are in the top tax bracket, said Jack Bernstein, a tax expert speaking at a clinic during the 113th ODA Annual Spring Meeting recently. Bernstein outlined ways to avoid paying unnecessary taxes.

Income splitting among family members might save taxes, but he warned his audience to consider certain factors before proceeding, such as the stability of the marriage, the income of the spouse and the ages of dependents.

TAX SHELTERS

Bernstein said anyone without a will leaves less flexibility for tax planning.

He advised that for serious estate planning an expert should be consulted.

Tax shelters, plans which allow the exemption of certain income portions from current taxable income are not for everyone, Bernstein said. Shelters are best for dentists in the top 62 per cent tax bracket.

"Can you afford to lose your investment? If you can't, then don't go into a tax shelter," he said.

Often, he explained, a "negative tax flow" occurs for some years.

Bernstein was one of many speakers at the ODA meeting. Others included Dr. Tom McKean who discussed "Treatment of injuries to the teeth and supporting structures (primary and permanent)," Dr. Sigurd Ramfjord on "Prevention and treatment of periodontal pockets," and Marvin Cutler, an interior architectural specialist in dental office planning and design.

Cutler focused on the need for outside professional help "to create a stress-free and comfortable environment" in dental offices.

According to Cutler, dentists differ from other professionals in that they are "locked into their environment." Dental care services, he pointed out, can seldom be delivered without the necessary equipment.

Throughout the Monday afternoon session of the ODA meeting Cutler frequently emphasized that good office planning and design relieve stress.

Generally, he is opposed to the open concept of office plans calling it "sound and visual pollution." However, he does admit this approach can sometimes work in an orthodontic or paedodontic practice.

ODA Meeting

On April 29, Dr. Bradley Holmes of Kenora was installed as new president of the Ontario Dental Association, succeeding Dr. Gary Pitkin of Toronto.

Dr. Holmes graduated from the University of Toronto's Faculty of Dentistry in 1965 and has been in private practice in Kenora for the past 13 years.

He has been on the ODA Board of Governors for eight years and Ontario's Executive Council for two years.

Lectures, clinics and commercial exhibits were featured at the 113th Annual Spring Meeting of the Ontario Dental Association.

The convention, attended by over 3,500 delegates, guests and exhibitors, was held at the Sheraton Centre in Toronto, April 27 to 30.

Ontario dentists were able to select from a variety of different activities, including lectures on subjects relating to dentistry as well as several all day clinics.

Over 135 commercial exhibits were open all day Monday, Tuesday and half a day on Wednesday.

Exhibitors offered samples of mouthwashes, toothbrushes, sugarless gum, toothpaste and large size toothpaste boxes.



Ontario Dental Association president for 1980-81 is Dr. Brad Holmes, left. Past president is Dr. Gary Pitkin, centre and Dr. Robert Schiewe is president elect.

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Council on Student Affairs - update

The Council on Student Affairs, established in 1977, consists of six members who serve a three-year term. Two members are chosen each year from election by representatives at the annual Canadian Dental Students' Conference. The two positions are officially designated as CDA student governor-elect and future CDSC chairman.

Most CDSC representatives are third year dental students and sit as graduate dentists during their final term. This establishes continuity and experience for the Council and its relationship to CDA.

As a Council, an annual report on student affairs is presented to the CDA Board of Governors. The student governor-elect attends all Board meetings as an observer prior to assuming voting privileges. The director of Student Affairs, Linda Teteruck, attends all CDSC, Council and Board meetings. The Council has an executive liaison, who may also speak at all Executive Council and Board meetings.

The CDA student governor, student governor-elect, CDSC chairman and past CDSC chairman, attend all CDSC meetings as non-voting observers or resource personnel for new representatives. The Council may delegate a member of Council to attend the National Dental Examining Board meeting, the Association of Canadian Faculties of Dentistry Conference and the ACFD Annual Teachers' Conference. A member of Council also sits on the Council on Education as a full voting member. This year only, the Council will be sending one member to the American Association of Dental Students' (AADS) Conference to investigate the advantages and possibilities of establishing a permanent liaison with American dental students.

The Council is concerned with planning and running the annual Canadian Dental Students' Conference; distributing the CDA Journal to student members; promoting undergraduate and graduate insurance packages available through the Canadian Dental Service Plans Inc. (CDSPI); establishing liaisons with other dental organizations and CDA branches; and new business.

It is from the Canadian Dental Students' Conference that the Council receives many of its directives and new ideas. The two new Council members chosen every year come from among the representatives to the CDSC.

Student voluntary membership in CDA has increased in the last two years from 75 per cent in 1977-78, to 93 per cent in 1978-79 and to over 93 per cent in 1979-80. Membership has been promoted by "Welcome to the Profession" receptions, membership pamphlets, limiting eligibility for the CDSPI "grad package" to CDA student members only and by reimbursing CDA student members for their CDA membership fee in their graduating year.

Insurance programs available through CDSPI are promoted by Council and through the two most recent Canadian Dental Students' Conferences. Applications for undergraduate insurance plans now come within the CDA membership pamphlet and requests have been made by CDSC '79 and the Council to streamline the CDSPI "grad package" application form.

The Council on Student Affairs has gathered information on summer employment and temporary licensure for dental students, financial aid for dental students, costs of dental education, student table clinic programs and an assessment of

membership in the International Association of Dental Students. Council's current activities include studies in practice management and its role on dental school curriculae and accredited internship and graduate programs in North America.

The preceding article was prepared by Dr. Gary Cousens, Past CDA Student Governor.

Correction

Please note the following corrections for the articles "Direct impression technique — Sealing prepared apical foramen" and "Conservative treatment of apical foramen — New root canal techniques," both by Dr. W.H. Christie and Dr. M.D. Peikoff of Winnipeg, Manitoba:

(1) Figures 1 A, B, C on page 175 should have been on page 183; (2) Figures 2 A, B, C on page 176 should be on page 184; (3) Figures 1 A, B, C on page 183 should be on page 175; and (4) Figures 2 A, B, C on page 184 should be on page 176.

Also note that in the discussion of Figure 7, page 179, the word 'sealing' should read 'seating'.

Readers interested in reprints of the above articles please note corrections will be made.

The Journal apologizes to Dr. Peikoff and Dr. Christie for these errors.

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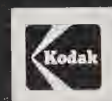
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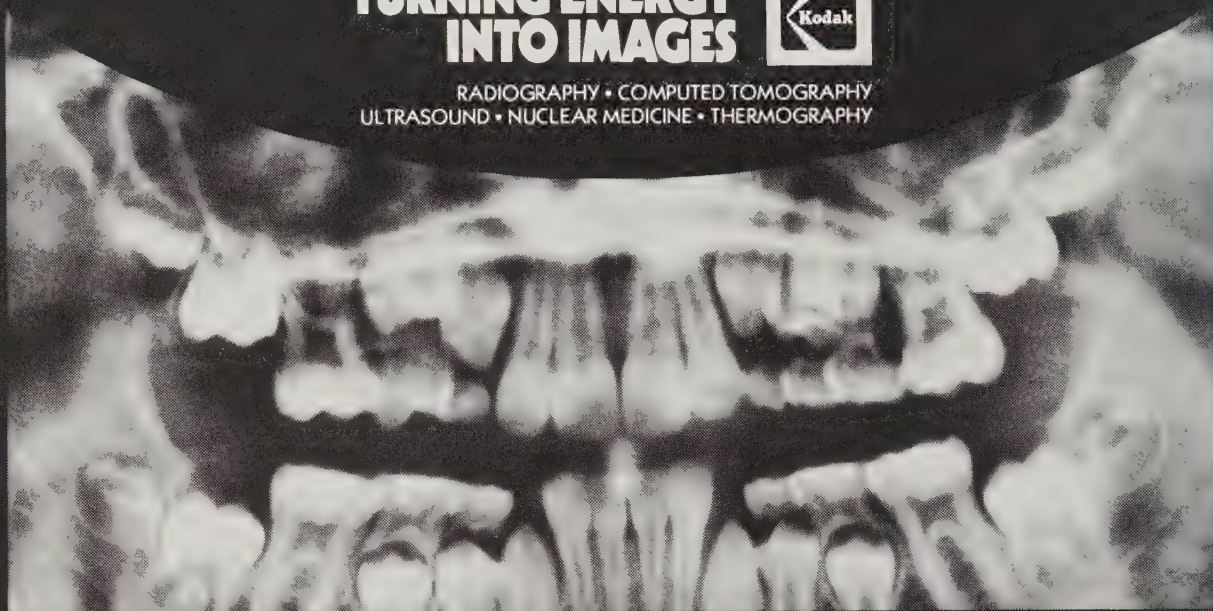
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La gestion d'une pratique

Aujourd'hui, le dentiste doit, en plus de dispenser des soins cliniques de première qualité, savoir gérer un personnel. Malheureusement, la plupart des dentistes n'ont pas reçu de formation dans ce domaine. Cet article fait état des principaux problèmes qu'un dentiste peut éprouver en gérant le personnel de son cabinet, et propose quelques solutions.

PROBLÈMES FONDAMENTAUX

Honoraires et salaires — En règle générale, les dentistes touchent des honoraires pour les services rendus, alors que leurs employés reçoivent un salaire fixe. Cette situation peut créer un conflit dans la pratique, surtout quand le dentiste désire continuer à travailler après les heures régulières. Ces désaccords peuvent nuire grandement aux relations entre le dentiste et son équipe. Indirectement, les services aux patients peuvent en souffrir.

Aire de travail circonscrite — Le cabinet dentaire est particulier du fait que l'employeur et l'employé travaillent constamment très près l'un de l'autre. Ce fait peut contribuer à aggraver certains problèmes mineurs comme les manies agaçantes.

Patients nerveux — Outre qu'ils doivent rendre des services qui impliquent des procédés techniques exigeant beaucoup d'attention, les employés d'une pratique dentaire ont souvent affaire à des patients craintifs et nerveux qui mettent leur patience à dure épreuve. Aussi sont-ils plus susceptibles lorsqu'il surgit des conflits entre eux.

Promotions limitées — Un professeur ou une infirmière qui veut faire carrière a la chance d'accéder un jour à un poste supérieur. Un assistant ou un hygiéniste dentaire n'a pas cette même chance. Leur carrière ne comporte aucune hiérarchie, d'où les déceptions et les frustrations. Certains prennent

même le parti d'abandonner complètement la dentisterie.

Absentéisme — L'un de ces problèmes ou tous ces problèmes à la fois peuvent amener les employés dentistes à s'absenter de leur travail. Or, l'absence d'un seul employé peut perturber les opérations quotidiennes et imposer un surcroît de travail aux autres employés.

PRINCIPALES SOLUTIONS

On peut prévenir plusieurs de ces problèmes ou les corriger en tenant compte des facteurs suivants.

Sélection du personnel — Les principaux critères sur lesquels un dentiste doit se baser pour engager un nouvel employé sont la formation, l'expérience et le degré de maturité du candidat. Formation et expérience s'obtiennent avec le temps, mais la maturité, qui est une qualité essentielle, ne s'acquiert pas aisément. Les nouveaux employés doivent faire preuve de maturité s'ils veulent pouvoir travailler en collaboration étroite avec les autres et être capables d'inspirer confiance aux patients.

Jour de paye fixe — Le personnel peut se sentir gêné si le salaire n'est pas distribué régulièrement et s'il doit s'en remettre aux caprices du dentiste. Pour le rassurer, il faut faire en sorte

que la paye soit faite à intervalles réguliers, toujours le même jour et même, si possible, à la même heure de ce jour.

Compensation pour les heures supplémentaires — Les assistants accepteront de faire des heures supplémentaires seulement moyennant rétribution. Il peut s'agir d'argent, de congés ou d'autres privilèges comme des soins dentaires gratuits ou une chance de suivre des cours en éducation permanente.

Congé de maladie — Le meilleur moyen de régler le problème des absences est d'encourager les employés à ne pas se prévaloir des congés de maladie. On peut leur offrir des bénéfices supplémentaires en argent ou en d'autres congés, surtout quand on prévoit que les tâches seront particulièrement lourdes.

Lorsqu'un employé est malade, il faut faire en sorte de ne pas surcharger les autres employés. Les pratiques collectives peuvent faire appel à un suppléant. Les pratiques privées peuvent demander à un ancien employé d'accepter de les dépanner sur bref avis ou partager un suppléant avec d'autres pratiques privées.

SOLUTIONS SECONDAIRES

En plus de s'assurer que les condi-
à la page 364

Régime d'épargne-retraite de l'ADC

Les valeurs respectives du Régime d'épargne-retraite de l'Association Dentaire Canadienne étaient les suivantes au 30 avril 1980:

<i>Fonds d'actions ordinaires</i>	\$45.302
<i>Fonds à revenu fixe</i>	\$22.624
<i>Fonds garanti</i>	\$17.425
<i>Fonds de placement équilibré</i>	\$11.318

L'avoir total (valeur marchande) du régime s'élevait à \$33,739,257.

Au 31 mars 1980, les chiffres du mois précédent étaient les suivants:

<i>Fonds d'actions ordinaires</i>	\$43.160
<i>Fonds à revenu fixe</i>	\$26.462
<i>Fonds garanti</i>	\$17.289
<i>Fonds de placement équilibré</i>	\$10.853

L'avoir total (valeur marchande) du régime s'élevait à \$34,437,010.

Pour obtenir tout renseignement supplémentaire, prière de s'adresser aux: Régimes des rentes et d'assurances subventionnés par l'ADC, P.O. Box 7500, Station A, Toronto, Ontario M5K 1A0.

Conférenciers de l'ADO

La plupart des dentistes de l'Ontario ont un revenu imposable qui se situe au palier supérieur d'imposition, a déclaré le Dr Jack Bernstein, un expert en matière fiscale, lors d'une conférence qu'il prononçait au 113e congrès annuel de l'ADO, en avril dernier. Le Dr Bernstein a indiqué des

moyens pour éviter de payer inutilement des impôts.

Le partage des revenus parmi les membres de la famille peut épargner des impôts, a-t-il dit. Encore faut-il tenir compte de certains facteurs comme la stabilité du mariage, les revenus du conjoint et l'âge des personnes à charge.

REFUGES FISCAUX

Selon le Dr Bernstein, il est moins facile de planifier ses impôts si l'on n'a pas fait de testament. Aussi, pour

toute succession importante, recommande-t-il que l'on fasse appel à un expert.

Les refuges fiscaux sont des régimes selon lesquels on obtient des exemptions pour une certaine partie du revenu imposable courant, mais, de dire le Dr Bernstein, tous ne peuvent en profiter.

Les refuges fiscaux conviennent aux dentistes dont les revenus se situent au palier supérieur d'imposition, soit 62 pour cent. "Pouvez-vous vous permettre de perdre vos investis-

Une bonne gestion du personnel

de la page 363

tions de travail sont satisfaisantes, un bon employeur doit essayer d'encourager ses employés à travailler avec ferveur. Il y a plusieurs façons d'atteindre ce but.

Partager l'information — L'efficacité des employés s'améliore lorsque l'employeur les tient au courant de tout ce qui intéresse leur milieu de travail. L'employeur peut faire part de ses projets à ses employés, demander leur avis et les inviter à faire des commentaires sur les opérations quotidiennes quand ils en sentent le besoin.

Encourager les initiatives personnelles — Les dentistes peuvent encourager leurs employés à prendre des initiatives en leur confiant des tâches cliniques et non cliniques qu'ils peuvent légalement accomplir. Il s'agit de leur donner des responsabilités sans leur tenir toujours la main. Une fois que l'on se respecte de part et d'autre et que la confiance règne, l'employeur devrait permettre aux employés de prendre des initiatives pour ces tâches qu'il leur a déjà vu faire et leur laisser pleine liberté de les accomplir à leur gré. Se sachant capables de prendre certaines décisions par eux-mêmes, les employés seront moins ennuyés par les limites que la carrière impose.

Développer l'esprit d'équipe — Le moyen le plus simple pour un groupe de développer un esprit d'équipe est d'organiser des rencontres sociales.

Les occasions ne manquent pas de réunir les employés: assemblées, anniversaires, départs, fêtes, séances de photographies annuelles, compétitions sportives, etc. Les rencontres sociales sont mieux réussies quand elles sont restreintes aux membres du personnel et n'incluent pas d'autres personnes (e.g. les conjoints). De plus, il vaut mieux organiser les rencontres au bureau ou à quelque autre endroit qui n'engage aucunement qui que ce soit. Il peut être intimidant pour les employés de se rencontrer à la résidence de l'employeur.

Avis — Dans toute rencontre sociale, il est toujours dangereux que les relations de travail ne deviennent personnelles.

AVANTAGES D'UNE BONNE GESTION DU PERSONNEL

Un personnel conscient de sa valeur acquiert de l'assurance et communique mieux avec les autres aussi bien au travail qu'ailleurs. Les dentistes en bénéficient en sachant que le travail des employés est toujours excellent, que les changements dans son personnel seront peu nombreux et que les problèmes qui surgissent infailliblement dans un bureau seront réglés rapidement, parfois même à son insu. Ils peuvent alors se consacrer davantage à leur travail personnel et donner de meilleurs soins dentaires. À son tour, le public profite d'une telle situa-

tion. Il est difficile de dire pourquoi, mais les patients reconnaissent une pratique qui est "heureuse". Voilà un fait qui importe quand on veut calmer les patients inquiets.

OUVRAGES RECOMMANDÉS

Articles:

- 1 Drucker, P.F.: The effective decision. Harvard Business Review 45 (1): 92, 1967.
- 2 Greiner, L.F.: Patterns of organizational change. Harvard Business Review 45 (3): 119, 1967.
- 3 Herzberg, F.: One more time: How do you motivate employees? Harvard Business Review 46 (1): 53, 1968.

Livres:

- 1 DuBrin, A.J.: The practice of supervision. Business Publications Inc., Georgetown, Ontario, 1980.
- 2 Napier, R.W. and Gershenfeld, M.K.: Groups: theory and experience Houghton Mifflin Co., Boston, Mass., 1973.
- 3 Olmsted, M.S. and Hare, A.P.: The small group. Random House, New York, N.Y., 1978.
- 4 Roethlisberger, F.J. and Dickson, W.J.: Management and the worker. Harvard University Press, Cambridge, Mass., 1970.
- 5 Sanford, A.C.: Human relations: theory and practice. Charles E. Merrill Publishing Company, Columbus, Ohio, 1973.

Cet article est dû à la plume du Dr Al MacLeod qui dirige une pratique collective à Halifax, en Nouvelle-Écosse. Le Dr MacLeod est également président du Conseil de Rédaction du Journal.

(suite)

sements? Sinon, ne recourez pas aux refuges fiscaux," a-t-il dit. Souvent, a-t-il expliqué, il en résulte "un impôt négatif" pour quelques années.

Le Dr Bernstein était l'un des conférenciers du congrès de l'ADO. Parmi les autres conférenciers, citons le Dr Tom McKean qui a parlé de la façon de traiter les lésions des dents et de l'appareil de maintien dentaire (temporaires et permanents) et le Dr Si-

gurd Ramfjord qui a fait un exposé sur la prévention et le traitement des culs-de-sac gingivo-dentaires. Quant à M. Marvin Cutler, architecte décorateur d'intérieurs, il a parlé du plan et de l'aménagement d'un cabinet dentaire.

M. Cutler a invité les dentistes à faire appel aux services d'un décorateur professionnel pour l'aménagement de leurs cabinets afin de "créer un milieu confortable qui invite à la détente."

Contrairement aux autres gens de profession, a déclaré M. Cutler, les

dentistes sont "enfermés dans leur milieu." Les soins dentaires, a-t-il fait remarquer, sont rarement dispensés en dehors de pratiques où se trouve l'équipement nécessaire.

Pendant la conférence du lundi après-midi, M. Cutler a démontré qu'un cabinet dentaire bien aménagé diminue la tension.

Aussi est-il opposé au concept des cabinets ouverts qui déplaisent à l'oeil et n'étouffent pas les bruits. Cependant, il a admis que ce concept peut parfois être valable dans une pratique d'orthodontie ou de pédodontie.

113e congrès

L'Association dentaire de l'Ontario a tenu son 113e congrès annuel du 27 au 30 avril dernier, au Centre Sheraton de Toronto, en présentant des conférences, en offrant des démonstrations cliniques et en invitant les commerçants à exposer leurs nouveautés.

Plus de 35,000 délégués, invités et exposants ont participé au congrès.

Le programme était varié, comprenant des conférences sur des sujets dentaires et plusieurs des démonstrations cliniques occupaient toute une journée.

Ouverts le lundi, le mardi et une partie du mercredi, les quelque 135 kiosques d'exposition offraient en échantillon des rince-bouche, des brosses à dents, des gommes à mâcher sans sucre, des pâtes dentifrices et des boîtes géantes de pâte dentifrice.

Le 29 avril, le Dr Bradley Holmes, de Kenora, succédait au Dr Gary Pitkin, de Toronto, à titre de nouveau président de l'Association dentaire de l'Ontario.

Le Dr Holmes a reçu son diplôme de la Faculté dentaire de l'Université de Toronto, en 1965, et il travaille dans une pratique privée de Kenora depuis 13 ans.

Il a été membre du Conseil d'administration de l'ADO pendant huit ans et membre du Conseil exécutif pendant deux ans.

UNE DÉCLARATION DE L'ADC EST TROP RESTRICTIVE

La Déclaration que l'Association dentaire canadienne a présentée à la Commission d'enquête sur les services de santé, le 5 mars 1980, et que le Journal a publiée dans le numéro d'avril, est un document bien écrit qui, dans sa plus grande partie, expose notre cas de façon appropriée. Toutefois, je crois que les activités de notre profession y sont, malheureusement, décrites avec étroitesse.

Je ne peux accorder, comme il est dit dans le chapitre des recommandations, que la principale préoccupation de l'ADC soit la santé dentaire des Canadiens. Notre principale préoccupation devrait être le bien-être **général** des Canadiens. Sans doute, notre responsabilité est de soigner l'ensemble de l'appareil dentaire, mais nous ne devons pas donner l'impression que seules les dents nous préoccupent.

Même quand nous voulons décrire notre spécialité, il importe de faire remarquer que nous veillons à la santé buccale de nos patients, pas seulement à leur santé dentaire. Les membres de notre profession soignent une gamme étendue de maladies qui affectent les mâchoires et les parties molles de la bouche dont plusieurs n'ont rien à voir avec les dents. Pour ne citer qu'un

exemple frappant, nous sommes bien placés pour déceler les premiers symptômes de malignité dans la bouche d'un patient. Il est vrai que nous, dentistes, passons la plus grande partie de notre temps à soigner les maladies dentaires, mais elles ne sont pas notre seule préoccupation.

La déclaration de l'ADC à l'effet que les caries dentaires et les maladies parodontaires sont les deux maladies les plus importantes, aurait besoin d'être précisée. Ces maladies sont certainement les plus répandues. Cependant, le patient dont la langue est affligée d'un carcinome squameux avancé, pensera avec raison que sa maladie est bien plus grave que l'une ou l'autre des maladies mentionnées.

J'espère que notre Association, la prochaine fois qu'elle fera des déclarations publiques sur nos activités, aura soin d'indiquer que nous ne nous intéressons pas seulement aux dents des Canadiens, si importantes qu'elles soient. Notre profession mérite d'être présentée dans une optique plus large que celle-là.

David G. Gardner, DDS, MSD,
Professeur et président,
Division de la pathologie buccale,
Université de Western Ontario.

Lettres

Le Conseil des étudiants

Le Conseil des Affaires étudiantes (CAE) a été établi en 1977 et se compose de six membres. Chaque année, les représentants de la Conférence des étudiants canadiens en dentisterie (CECD) élisent deux membres qui sont mandatés pour trois ans. L'un sera appelé à devenir président des Affaires étudiantes de l'ADC et l'autre, à présider la Conférence des étudiants l'année suivante.

La plupart des représentants de la CECD en sont à la troisième année de leur programme d'études dentaires. Il s'ensuit que leur mandat comme membres du CAE se prolonge au-delà de leurs études. Aussi le CAE entretient-il des relations très étroites avec l'ADC et bénéficie-t-il d'une bonne expérience.

En tant que conseil, le CAE est tenu de présenter un rapport annuel sur les affaires étudiantes au Conseil d'administration de l'ADC. Le futur président des Affaires étudiantes assiste aux assemblées du Conseil d'administration à titre d'observateur seulement; le droit de vote lui sera conféré une fois qu'il remplira ses fonctions de président. La directrice des Affaires étudiantes, Linda Teteruck, assiste à toutes les assemblées de la CECD, du CAE et du Conseil d'administration. Le CAE a un agent de liaison qui a le droit de participer à toutes les assemblées du Conseil exécutif et du Conseil d'administration.

Le président actuel et le futur président des Affaires étudiantes de l'ADC ainsi que le président actuel et le président sortant de la CECD assistent à toutes les assemblées de la CECD à titre d'observateurs non votants ou d'experts pour aider les nouveaux représentants. Le CAE peut aussi déléguer un de ses membres à l'assemblée du Bureau national d'examen dentaire du Canada, à la Conférence de l'Association des Facultés den-

taires du Canada (AFCD) et à la Conférence annuelle des professeurs de l'AFCD. Un membre du CAE fait également partie du Conseil de l'Éducation et y a droit de vote. Cette année seulement, le CAE doit déléguer un de ses membres à la Conférence de l'Association américaine des étudiants dentaires afin d'étudier les possibilités d'établir des relations suivies avec les étudiants dentaires américains et les avantages qui en découleraient.

Le CAE s'occupe de planifier et de tenir chaque année la Conférence des étudiants canadiens en dentisterie; de distribuer le Journal de l'ADC aux étudiants qui sont membres de l'Association; de promouvoir auprès des étudiants diplômés et non diplômés les régimes d'assurance offerts par les CDSPI; d'établir des relations avec les autres organismes dentaires et les divisions de l'ADC; et de mener de nouvelles affaires.

Le CAE reçoit plusieurs directives de la Conférence des étudiants et y puise des idées nouvelles. Les deux membres de la CAE sont choisis chaque année parmi les délégués à la Conférence.

L'adhésion des étudiants à l'ADC est libre mais, au cours des deux dernières années, le nombre des membres a considérablement augmenté. 75 pour cent des étudiants en dentisterie faisaient partie de l'ADC en 1977-78 et 93 pour cent, en 1978-79. Ce dernier pourcentage a été dépassé pour l'année en cours. Avant que ne soit formé le CAE, la moyenne des étudiants qui étaient membres de l'ADC n'était que de 70 pour cent. On a augmenté cette moyenne en organisant des réceptions de bienvenue à la profession, en révisant et en améliorant les brochures de renseignements sur l'Association, en limitant l'admissibilité aux régimes d'assurance offerts par les CDSPI aux étudiants qui adhèrent à l'ADC, et en

leur remboursant leurs frais d'adhésion l'année où ils sont diplômés.

Les brochures de renseignements sur l'Association contiennent des formulaires de souscription à l'intention des étudiants qui veulent participer aux régimes d'assurance conçus pour les non diplômés. De plus, à la Conférence des étudiants de 1979, on a demandé au CAE de remanier le formulaire de souscription aux CDSPI à l'intention des diplômés.

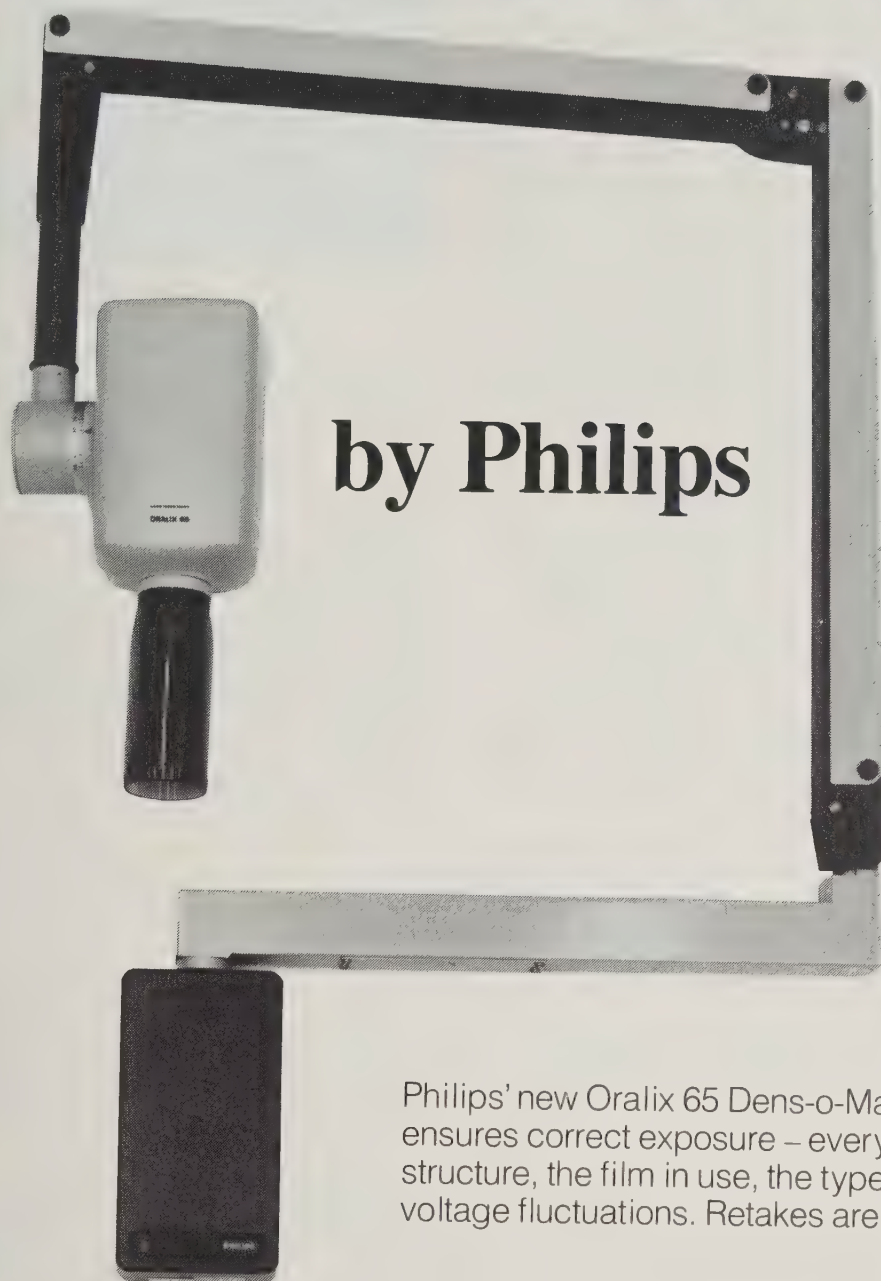
Le CAE recueille des renseignements sur les emplois disponibles durant l'été, les permis temporaires accordés aux étudiants en dentisterie, l'aide financière qui peut leur être apportée, les frais d'éducation, les programmes de démonstrations cliniques en table ronde et l'importance d'adhérer à l'Association internationale des étudiants en dentisterie. Parmi ses autres activités, le CAE fait des études sur la gestion des pratiques dentaires, tente de définir son rôle dans l'établissement des programmes d'études dentaires et fournit des renseignements sur les programmes d'agrément dans les internats ainsi que sur les programmes d'études supérieures en Amérique du Nord.

Cet article a été rédigé par le Dr Gary Cousens, président sortant des Affaires étudiantes à l'ADC.

À VENDRE ÉTAGÈRES POUR BROCHURES

Pour exposer vos brochures de l'ADC, pourquoi ne vous procurez-vous pas une étagère conçue spécialement à cette intention? Pour la modique somme de \$12.95, plus la taxe et les frais d'expédition, l'ADC vous fera parvenir une étagère comprenant trois tablettes. Veuillez adresser votre commande à l'Association dentaire canadienne, Service des Communications, 1815, promenade Alta Vista, Ottawa, Ontario, K1G 3Y6.

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PHILIPS

Convention 1980

Dentistry for the elderly

"If the dental profession wishes to preserve and enhance its place among health professionals, it must be prepared to meet the challenge of the changing needs of society," notes Dr. A.S. Franks, consultant dental surgeon, Dental School and Hospital, University of Birmingham, Birmingham, England. Dr. Franks will discuss "Dentistry for the Elderly" at the Wednesday morning session of Canadian Dental Association Convention Scientific Program. According to Dr. Franks, it is a "major professional responsibility" of the dental profession to meet the requirements of the increasing number of elderly in the community, even if they do not always directly request help.

Five basic questions about old people should be considered: who are they? why are they special? why bother about them? what is their need? and, what should we try to provide? In looking at answers to these questions, consideration must be given to the changes — physical, mental, social and economic brought about by ageing.

Dr. Franks specifies that to provide good dental care, dentists must make contact with their elderly patients, gain their confidence and investigate their specific needs. In his presentation, Dr. Franks will consider these three aspects of diagnosis as they relate to the main medical problems of the elderly and the way these problems affect the delivery of dental care. Reference will be made to the complications of history taking in senior citizens.

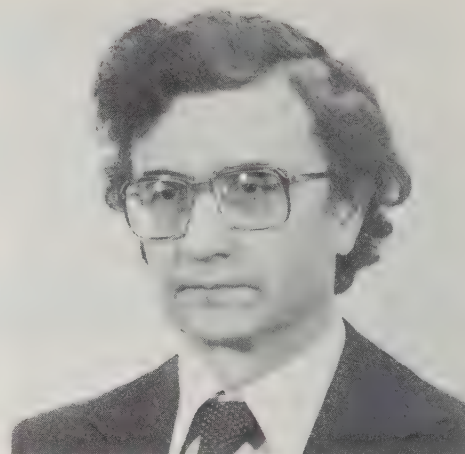
Dr. Franks summarizes clinical dentistry for old people as "oral rehabilitation." In terms of restoration, this means looking at (a) the function of the mouth, (b) the ability to communicate easily and with

confidence and, (c) social acceptability.

Only certain aspects of geriatric oral rehabilitation will be reviewed and Dr. Franks will focus on nutritional problems, oral hygiene, attrition of the teeth, pulp changes, caries and periodontal disease and tooth loss.

Dr. A.S. Franks is currently consultant dental surgeon, Birmingham Area Health Authority, England. He is senior clinical lecturer at the University of Birmingham Dental School and an examiner in Dental Surgery at the same University.

A frequent guest lecturer in many parts of Canada, the United States and Europe, Dr. Franks is a recipient of the Colyer Prize for Research, Royal Society of Medicine Bowen Memorial Prize for Dentistry. He is



Dr. A.S. Franks

a former editor of the Journal of Oral Rehabilitation and has served as chairman and foundation secretary with the British Society of Dentistry for the Handicapped. He is the current president of the International Association of Dentistry for the Handicapped.

Dr. Franks graduated in dentistry from the University of Manchester in 1954 and was awarded a Master of Science (Physiology) in 1960. Four years later he earned his research doctorate.

Welcome to Halifax...

As Chairmen of the Organizing Committee we are pleased to invite you to Halifax for the 1980 National Convention of the Canadian Dental Association. The dates, July 13-16, were chosen with vacation time in Nova Scotia in mind.

As will be noted we have arranged a broad and varied clinical and social program with emphasis on Nova Scotian hospitality. Practically every area of dentistry will be covered in the clinical program and, socially, we have a diverse program ranging from a lobster party to tours of historic sites and antique shopping.

It is our hope you will plan to spend more time in Nova Scotia to enjoy this scenic province at the peak of vacation time. Historic Halifax offers fine dining, shopping, museums, entertainment and a host of other activities. Upon registration you will be provided with a package of travel information to assist you in your holiday planning.

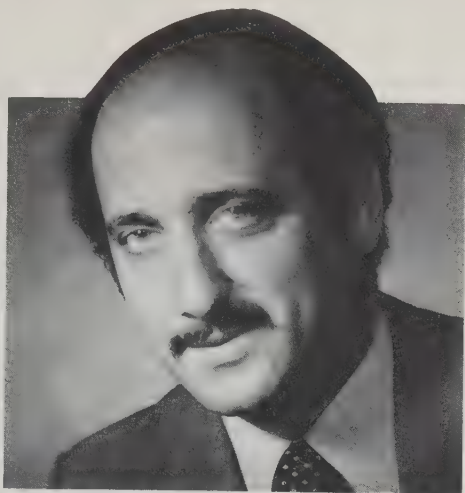
It is our wish that you will come to Halifax to attend the most enjoyable, refreshing and educational convention ever.

"Learn and Relax in Halifax" is our theme . . . and we mean it!

John S. Christie

Terrence D. Ingham

Convention 1980



Dr. Clyde Covit

High risk patients

Dr. Robert Hoar, assistant professor, Dalhousie University, is the Tuesday afternoon speaker. Currently on leave of absence at the M.D. Anderson Hospital and Tumor Institute, University of Texas, Houston, Texas, Dr. Hoar will discuss "The Head and Neck Examination in Search of . . ."

During his presentation, he will look at the high risk patient, necessary instruments and supplies. He will also outline, step-by-step, the procedure of head and neck examination and the diagnostic procedures that influence definitive treatment.

Dr. Hoar will discuss techniques of patient questioning and close his presentation with a discussion of some misdiagnoses noted at the M.D. Anderson Hospital.

For a complete scientific program, see the May, 1980 Journal.

From the President

The Canadian Dental Association Convention is the once-a-year occasion for members of our profession, from every province in Canada, to meet together — to learn during the scientific sessions and to renew old acquaintances during the social gatherings.

Last year, in Quebec City, I received the Presidential Chain of Office. This year, I will pass that Chain on to the next CDA president, Dr. Gil Utas. This is a symbolic gesture, but one

which demonstrates continuity in our Association and the solid foundation which is the basis of our strength from one executive to the next.

The Organizing Committee in Halifax has worked hard to bring you both a work and fun-filled program. Don't overlook any of the activities!

Welcome to Halifax and, welcome to the Canadian Dental Association Convention, 1980!

Clyde Covit, DDS
President

THE SOCIAL PROGRAM

OPENING NIGHT CEREMONIES and CHOWDER PARTY

Dress: Casual

SUNDAY, July 13

HOTEL NOVA SCOTIAN

Everyone is welcome: all delegates, all spouses. It is included in your registration package. Cash bar available.

PRESIDENT'S INSTALLATION LUNCHEON

MONDAY, July 14

HOTEL NOVA SCOTIAN

12:30 p.m.

Attendance is limited to C.D.A. delegates only. Cash bar.

LOBSTER PARTY

Dress: Casual

MONDAY, July 14

HALIFAX METRO CENTRE

7 p.m. — 1 a.m.

All delegates and registered spouses are invited. It is included in your package, but additional lobster provided at extra cost. Guests are invited to attend this function at a cost of \$25 each person. An optional menu is available to all.

DELEGATES LUNCHEON

TUESDAY, July 15

HOTEL NOVA SCOTIAN

12:15 p.m.

The Province of Nova Scotia is hosting a seafood luncheon to honour delegates of CDA, CDHA and CDNAA.

PRESIDENT'S DINNER AND DANCE

Dress: Optional

TUESDAY, July 15

HOTEL NOVA SCOTIAN

6:30 (reception for
8:00 p.m. (dinner)

This gala evening is open to advance ticket holders only. A cash bar is available at the reception (6:30-7:30 p.m.) and a gourmet dinner is planned. Music and dancing will follow.

BEEF 'N BEER

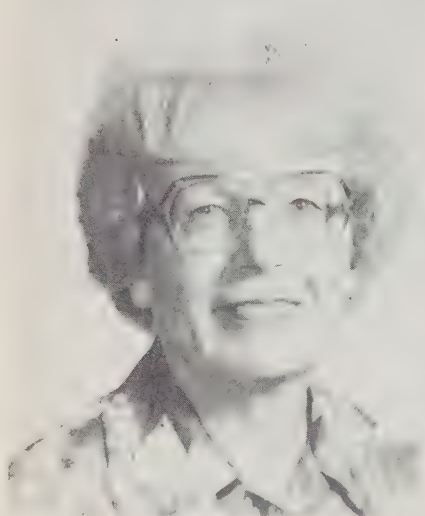
WEDNESDAY, July 16

DALHOUSIE ARTS CENTRE

12:00 noon

This "fun" luncheon will provide the final opportunity for all to view the trade exhibits.

Halifax 1980



Left: Dr. Esther Wilkins —
"Management of the Patient with Periodontal Disease in Private Practice"

Right: Dr. Vern Shaffner —
"Update on Fixed Prosthodontics"

À gauche: Dr. Esther Wilkins —
"Conduite à suivre avec un patient souffrant d'une maladie parodontaire dans les pratiques privées"

À droite: Dr. Vern Shaffner —
"Données récentes sur les prothèses fixes"

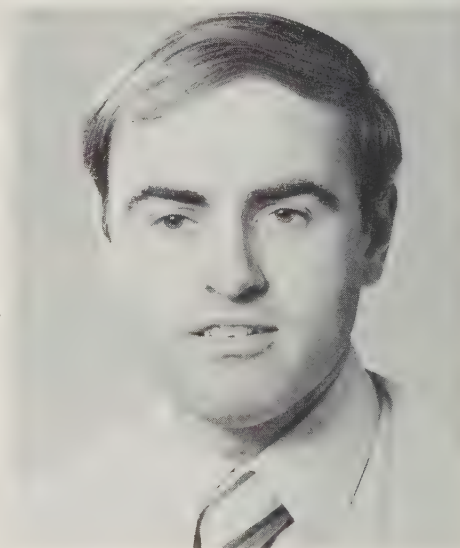


Left: Dr. Tom Larder —
"Saving Teeth Can be Easy!!"

Right: Dr. Ron Bannerman —
"Electrosurgery in Restorative Dentistry"

À gauche: Dr. Tom Larder —
"Sauver une dent peut être facile!!"

À droite: Dr. Ron Bannerman —
"La restauration physiologique et la diathermie chirurgicale en dentisterie restaurative"



Left: Dr. David Precious —
"The Correction of Dentofacial Deformities"

Right: Dr. Ted Oldenburg —
"Pedodontics for the General Practitioner"

À gauche: Dr. David Precious —
"La correction des déformations dento-faciales"

À droite: Dr. Ted Oldenburg —
"La pédodontie pour le praticien général"



Les gens âgés...

"Si la profession dentaire désire conserver son rang parmi les professions de la santé et accroître son prestige, elle doit être prête à relever le défi que posent les nouveaux besoins de la société." Ainsi s'exprimait le Dr A. S. Franks, consultant en chirurgie dentaire à l'hôpital et à l'école dentaire de l'Université de Birmingham, en Angleterre. Le Dr Franks parlera de "la dentisterie à l'intention des gens âgés", le mercredi matin, dans le cadre du programme scientifique du Congrès de l'Association dentaire canadienne. De l'avis du Dr Franks, il s'agit d'une "importante responsabilité professionnelle" pour les dentistes de répondre aux besoins du nombre croissant de gens âgés dans les communautés,

même si ceux-ci ne demandent rien par eux-mêmes.

Il y a cinq questions fondamentales qu'il faut se poser à propos des gens âgés. Qui sont-ils? Pourquoi sont-ils un cas spécial? Pourquoi doit-on s'occuper d'eux? Quels sont leurs besoins? Pourquoi faut-il répondre à leurs besoins? En cherchant des réponses à ces questions, il faut considérer les changements — physiques, psychologiques, économiques et sociaux — que l'âge apporte.

Le Dr Franks fait observer que, pour dispenser de bons soins dentaires aux vieillards, les dentistes doivent se faire connaître d'eux, se mériter leur confiance et s'enquérir de leurs be-

soins particuliers. Dans son exposé, le Dr Franks examinera ces trois points pour le diagnostic, tout en se référant aux principaux problèmes de santé des gens âgés et à la façon dont ces problèmes peuvent affecter la manière de leur rendre des soins dentaires. Il fera aussi allusion aux complications que pose l'anamnèse des gens âgés.

La dentisterie clinique pour les vieillards est, en résumé, "une réhabilitation orale", de dire le Dr Franks. Pour la médecine dentaire de restauration, cela signifie qu'il faille tenir compte: (a) des fonctions buccales, (b) de l'aptitude à communiquer avec facilité et confiance, (c) de l'admission en société.

Le Dr Franks révisera seulement quelques aspects de la réhabilitation orale en gériatrie. Il s'occupera surtout des problèmes d'alimentation, d'hygiène buccale, de l'abrasion des dents, des changements pulpaire, des caries, des maladies parodontaires et de la perte des dents.

Le Dr S. A. Franks est consultant en chirurgie dentaire au service de la *Birmingham Area Health Authority*, en Angleterre. Il est le plus ancien des conférenciers cliniques à l'École dentaire de l'Université de Birmingham et un examinateur en chirurgie buccale à la même Université.

Il est souvent invité à prononcer des conférences au Canada, aux États-Unis et en Europe. Il a reçu deux prix, l'un pour la recherche, le *Colyer Prize*, et l'autre, le *Medicine Bowen Memorial Prize* de la Société Royale, en médecine dentaire. Jadis, il était rédacteur du *Journal of Oral Rehabilitation* et il a déjà été président et secrétaire originaire de la *British Society of Dentistry for the Handicapped*. Il est le président actuel de l'Association internationale de dentisterie pour les handicapés.

Le Dr Franks a obtenu son diplôme en dentisterie à l'Université de Manchester, en 1954, et il s'est mérité une Maîtrise ès Sciences en physiologie, en 1960. En 1964, il obtenait son doctorat en recherche.

Bienvenue à Halifax

A titre de présidents du Comité organisateur, nous sommes heureux de vous inviter à Halifax pour le Congrès national de l'Association dentaire canadienne de 1980. Le rendez-vous est donné du 13 au 16 juillet, soit durant la période des vacances en Nouvelle-Ecosse.

Comme vous pourrez le constater, nous avons préparé un programme clinique étendu et varié ainsi que de nombreuses activités sociales qui feront valoir l'hospitalité de la Nouvelle-Ecosse. Le programme clinique couvre pratiquement tous les sujets de la dentisterie et les activités sociales sont très diverses, comprenant un dîner de homard, des excursions aux lieux historiques et des visites d'antiquaires.

Nous espérons que vous voudrez passer plus de temps en Nouvelle-Ecosse afin de parcourir cette province pittoresque au coeur de la belle saison. Dans le vieil Halifax, on trouve d'excellents restaurants, des boutiques, des musées, des divertissements et une multitude d'autres activités. Lors de l'inscription, on vous remettra une pochette contenant des renseignements qui vous aideront à bien profiter de vos vacances.

Nous désirons que vous veniez à Halifax afin de participer à un congrès qui promet d'être aussi enrichissant qu'amusant.

"Instruisez-vous et détendez-vous à Halifax." Ce n'est pas seulement le thème du Congrès, c'est aussi une promesse que nous vous faisons.

John S. Christie

Terrence D. Ingham

Congrès 1980

Le président vous invite au Congrès

Chaque année, le Congrès de l'Association dentaire canadienne fournit aux membres de notre profession venant de toutes les provinces du Canada, une occasion de se rencontrer, de se renseigner en assistant aux conférences scientifiques et de revoir d'anciennes connaissances en prenant part aux activités sociales.

collier présidentiel. Cette année, je le remettrai au prochain président de l'ADC, le Dr Gil Utas. C'est là un geste symbolique, mais il démontre que notre association est stable et que, d'une équipe d'administration à l'autre, elle repose sur des bases solides qui font ressortir notre force commune.

L'an dernier, à Québec, j'ai reçu le Le Comité organisateur d'Halifax a durement travaillé pour préparer à

votre intention un programme d'études et d'activités sociales. Ne ratez pas l'occasion d'en profiter!

Soyez les bienvenus à Halifax ainsi qu'au Congrès de l'Association dentaire canadienne de 1980.

Clyde Covit, D.D.S.
Président

PROGRAMME DES ACTIVITÉS SOCIALES

CÉRÉMONIES D'OUVERTURE et
DÉGUSTATION DE BISQUES
Tenue de sport

DIMANCHE, 13 juillet
HÔTEL NOVA SCOTIAN
19:30 — 23:00

Tous les délégués et leurs conjoints sont les bienvenus. Cette soirée est comprise dans votre inscription. Le bar est payant.

DÉJEUNER D'INVESTITURE
DU PRÉSIDENT

LUNDI, 14 juillet
HÔTEL NOVA SCOTIAN
12:30

Seuls sont invités les délégués de l'A.D.C. Le bar est payant.

DÎNER DE HOMARD

LUNDI, 14 juillet
CENTRE MÉTRO D'HALIFAX
19:00 — 1:00

Tenue de sport

Tous les délégués et conjoints inscrits sont invités. Ce dîner est compris dans votre inscription. On a prévu deux homards par personne; les autres que vous prendrez seront à vos frais.

Pour les personnes non inscrites au Congrès, il en coûtera \$25 chacune pour participer à cette soirée. Ceux qui n'aiment pas les crustacés pourront choisir un autre menu.

DÉJEUNER DES DÉLÉGUÉS

MARDI, 15 juillet
HÔTEL NOVA SCOTIAN
12:15

Il s'agit d'un dîner de fruits de mer offert par la province de la Nouvelle-Écosse en l'honneur des délégués de l'ADC, de l'ACHD et de l'ACGMAD.

DÎNER ET BAL DU PRÉSIDENT

MARDI, 15 juillet
HÔTEL NOVA SCOTIAN
18:30 (réception)
20:00 (dîner)

Tenu: facultative

Cette soirée de gala est offerte seulement à ceux qui se seront munis d'un billet au préalable. Le bar sera payant pendant la réception (18:30 — 19:30). Le dîner plaira aux gourmets et sera suivi d'une soirée dansante.

BEEF 'N BEER

MERCREDI, 16 juillet
CENTRE DES ARTS DALHOUSIE
12:00

Ce déjeuner de plaisir vous donnera une dernière chance de visiter les kiosques des exposants.

CONFÉRENCES SCIENTIFIQUES

Au Congrès d'Halifax, le mardi après-midi, le Dr Robert Hoar, professeur adjoint à l'Université Dalhousie, présentera une conférence intitulée: "Examen de la tête et du cou à la recherche de . . ." Le Dr Hoar est actuellement en congé d'études à l'hôpital M.D. Anderson et à l'Institut de recherche sur les tumeurs de l'Université du Texas, à Houston, aux États-Unis.

Le Dr Hoar parlera du patient qui présente un risque considérable ainsi que des instruments et des appareils nécessaires à l'examen. De plus, il décrira par étapes le procédé d'examen de la tête et du cou ainsi que les procédés de diagnostic qui déterminent le traitement définitif.

Le Dr Hoar discutera des moyens d'interroger le patient et terminera son exposé en parlant des erreurs de diagnostic relevées à l'hôpital M.D. Anderson.



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Book Reviews

Sigurd P. Ramfjord and
Major M. Ash, Jr.

Periodontology and Periodontics

W.B. Saunders Company, 1979.
\$47.40

"Periodontology and Periodontics" is difficult to review because the two major categories dealt with — periodontology, the science, and periodontics, the art — are handled in different ways. Science and art are so dissimilar that the reader may suspect different authors and editors were responsible. Because there is such a disparity between the two major divisions of the text, they will be reviewed separately.

PERIODONTOLOGY

Periodontology is a joy to read. It is composed of three sections: Biology of the Periodontium; Pathology of the Periodontium; and Etiology and Diagnosis of Periodontal Disease. It is well written and readable — with the exception of Chapter II, Examination and Diagnosis, which is mixed and uneven in quality.

Discussed, in a logical sequence, are histology, anatomy, and physiology of the periodontium, and pertinent information about saliva, mastication, and swallowing. Following this is a review of the classification, epidemiology, eti-

ology, pathogenesis and histopathology of periodontal disease.

What we have is an exceptionally well done review of the literature related to the science of periodontology. The authors have demonstrated enthusiasm in preparing this review and have produced a well documented summary of current knowledge. The chapter references are comprehensive and range from classical works of historical interest to the most up-to-date reports of clinical and laboratory research.

There is some difference in the depth of review and discussion of topics which probably reflects the authors' own interests. For example, when considering that systemic conditions affected periodontal disease, only eleven lines of text are devoted to diabetes mellitus, which many clinical periodontists believe to be the most common factor associated with susceptibility to inflammatory periodontal disease. No mention is made of the possible role of chemical diabetes or prediabetes in pathogenesis, while the importance of 'severe and poorly controlled' diabetes is emphasized. On the other hand, 35 pages of text are used to deal with host responses and associated immunological reactions which is a currently popular subject for periodontal research and publication.

PERIODONTICS

While "Periodontology" is carefully written and well-organized, "Periodontics" is often devoid of these qualities suggesting the authors are much less comfortable discussing the delivery of periodontal therapy than they are reviewing the periodontological literature.

The problem is first noted when

techniques of periodontal diagnosis are considered. Basic oral diagnostic procedures are included which are redundant to this text. Although periodontal inspection and probing procedures are well-described, charting methods advocated would be unwieldy and cumbersome for the private practitioner — where time is an important consideration, a terse charting shorthand incorporating only necessary data is mandatory. The section on radiographic examination is also lacking, beginning with the authors' insistence on using the archaic eponym 'roentgenogram' rather than the currently used term 'radiograph.' Although basic radiographic findings suggestive of periodontitis and traumatic occlusion are presented, inadequate emphasis is placed on the value of the posterior bite wing radiograph in detecting bone resorption and assessing bone levels. The authors are unaware, also, that osseous trabecular superimposition can aid in determining facial and lingual bone levels. A paragraph dealing with radiograph density and contrast and the effects of kilovoltage, milliamperage, exposure time and development time is lacking in clarity and suggests they are not conversant with clinical dental radiography.

Rationales for periodontal therapy and treatment sequencing are discussed, but there is no logical organization and the reader will have difficulty retrieving material and incorporating it into an efficient, productive dental practice. The practising dentist requires something akin to a diagnostic and therapeutic flow sheet which enables him to rapidly evaluate the periodontal patient and plan appropriate therapy. Also needed is a more specific definition of the objectives of peri-

odontal therapy. For example, a short range objective is to establish an environment from which bacterial plaque can be and is readily removed by the patient. The long range objective is to establish and maintain a healthy, comfortable, functioning, stable, esthetically pleasing dentition. Only when distinct therapeutic objectives are defined can the practitioner accurately evaluate his patients' problems, plan treatments, and establish prognoses.

Oral hygiene procedures, calculus removal and root smoothing (planing or curettage) and occlusal therapy are well covered in the text, but excessive attention is paid to the use of sickles, hoes, and files at the expense of the more suitable curettes. Also, since bacterial plaque is the primary cause of inflammatory peri-

parent causes: lack of familiarity with, or need to, utilize efficient, reliable, and economical treatment techniques in private practice; and slavish dependency on the Ramfjord longitudinal studies of periodontal treatment in order to rationalize a single surgical technique for pocket management — the so-called modified Widman flap (once again, an eponym is used!). Lack of clinical pragmatism and diverse experience is evident at times when patient management is mentioned: advocating oral administration of drugs for management of the apprehensive patient rather than intravenous titration or nitrous oxide-oxygen sedation; not presenting the oral regimen for subacute bacterial endocarditis prophylaxis; advocating only interrupted sutures instead of continuous sling sutures when flap procedures are done.

Relationships between osseous deformities and periodontal pockets are skimmed over and the desirability of establishing bone contours consistent with periodontal health in order to maintain stability of pocket elimination has been ignored. Rather than presenting an eclectic approach to pocket elimination or reduction surgery, the authors advocate Ramfjord's variation of a flap curettage procedure. When many patients are treated, it is soon realized that they have different problems which require different surgical therapies: some with minimal pocket depth and considerable residual bone support can, after flap and osseous surgery, be made pocket free and able to readily remove all plaque themselves; others with marked bone loss or bizarre osseous defects are best treated with flap curettage and will have residual pockets that require professional maintenance; certain patients

will have mixtures of pockets that can and can't be eliminated. Obviously, if a patient can be made pocket free and is able to remove plaque, he will have to spend less time and money to ensure maintenance of oral health. More discussion of other accepted methods of pocket elimination and management is needed.

Other corrective procedures such as curettage and mucogingival surgery, intrabony pocket therapy, and furcation management, are dealt with adequately. In the chapter on gingivectomy, an archaic procedure for many periodontists, a rather obtuse indication is given: "for the elimination of moderately deep periodontal pockets (4 to 5 mm.) in the lingual and posterior aspects of the mouth, when these pockets can be eliminated without compromising the bone or the mucogingival border, and provided that the width of the gingivectomy wounds would not exceed 4 mm".

In the preface, the authors state "it is our hope that this book will help the seeking and open-minded clinician to select the best treatment of (sic) his patients." That they haven't presented alternative forms of pocket elimination surgery and discussed pros and cons and indications and contraindications, detracts considerably from their goal and, in effect, doesn't allow that 'open-minded clinician' to select and use the most appropriate treatment!

In the future editions of this text, it is hoped that the scattered deficiencies and omissions will be corrected and that it will be as valuable a textbook and reference work in periodontics as it is in periodontology.

"Periodontology and Periodontics" was reviewed by R.D. Oles, D.D.S., M.S., Dental Clinic, University of Saskatchewan, Saskatoon, Saskatchewan, S7N 0W0.

"In future editions of this text, it is hoped that the scattered deficiencies and omissions will be corrected and that it will be as valuable a textbook in periodontics as it is in periodontology."

odontal disease, plaque management should be emphasized and certainly discussed prior to calculus removal techniques.

Surgical therapy is considered under the following categories: objectives and principles, curettage, gingivectomy; flaps; mucogingival surgery; intrabony pockets; furcation involvements; and bone implants.

Shortcomings in discussions of surgical treatment have two ap-

Canadian dental graduates taking post graduate specialty training in the United States and then returning to Canada the practise . . . has increased the number of dental specialists in this country . . .

Canadian requirements in dental specialties

James H.P. Main, DBS, FDS, RCS, PhD, MRC Path, FRCD(C),
Toronto, Ontario

Until recently, little examination has been made of Canadian manpower requirements in the specialist branches of dentistry by any of the interested parties which may be taken to include the dental profession, the specialist groups themselves, the provincial governments to which responsibility for health matters was allocated by the British North America Act of 1867, and the Government of Canada. Neither has any of the various consumer groups evinced any interest in the matter. Indeed, if anything, there has been a general impression in the profession and in the universities, again until recent years, that there has been an under supply of all types of dental specialist, and those universities with faculties of dentistry, which had to decide for themselves on the number of trainee specialists that they should accept, have gradually increased the numbers of candidates in the various fields of specialization. The effect of many Canadian dental graduates taking postgraduate specialty training in the United States and then returning to Canada to practise, has been to increase steadily the number of dental specialists in the country.

The planning and execution of studies in health manpower are difficult, pragmatic, and, at best, imprecise. The World Health Organization has published one report,¹ containing advice on the development of health manpower studies, which covers most health professions, namely physicians, dentists, nurses, medical technicians, in a general way. Perhaps the most significant of the recommendations in this report is that the manpower requirements for any jurisdiction should be analyzed on a continuing basis, as changes frequently occur in numbers of health personnel, in practice pat-

terns and in training, and in need and demand for treatment; any one of which changes can significantly affect manpower requirements.

It is clearly in the interests of all concerned that the number of specialists in practice and in training should be appropriate to the requirements of the country.

SPECIALIST MANPOWER REQUIREMENTS IN ONTARIO

During the last two years, and primarily at the instigation of the provincial Ministry of Health, an attempt has been made in Ontario to assess the dental specialist manpower requirements for this province. The mech-

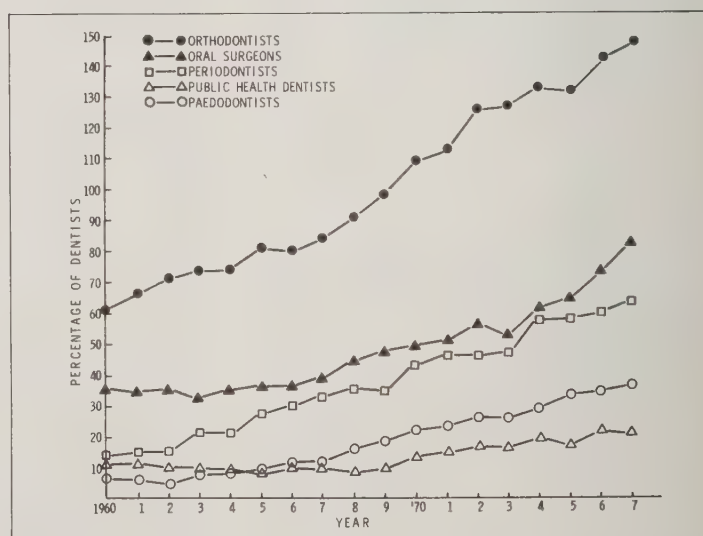


Fig. 1 Graph illustrating the growth in numbers of dental specialists in Ontario from 1960 to 1977. (Figures obtained from the Royal College of Dental Surgeons of Ontario.)

anism used for this purpose had been developed a few years earlier by a committee, the Postgraduate Manpower Committee (PGM) of the Council of Ontario Faculties of Medicine (COFM), under the chairmanship of Dr. J.E. Boone of the University of Western Ontario. This Committee and the numerous study groups that report to it are supported financially by the Ontario Ministry of Health. PGM-COFM have issued annual reports since 1975, one of which was published,² that have been transmitted as recommendations by COFM to the Ontario Ministry of Health. In 1976 the Ministry asked that PGM-COFM include the dental specialties as part of its responsibilities, and the writer was appointed to it by the two Ontario Faculties of Dentistry.

The methods of procedure that had been developed by PGM-COFM for the medical specialties were followed. For each specialty a study group was formed, the membership consisting of the heads of the appropriate dental school departments or the director of postgraduate studies for the discipline, one from the University of Toronto and one from the University of Western Ontario, and two members of the appropriate Ontario Dental Association Specialist Section. In most cases these were the president and secretary, but wide geographic representation was requested also, if possible. Over a period of seven or eight months, each study group examined the manpower situation in its own discipline and compiled a report on this, with recommendations for the number of trainees that should be accepted to achieve the perceived manpower need for the province.

A Dental Sub-Committee of PGM-COFM, composed of the directors of postgraduate studies or the equivalent, from each dental faculty, a representative nominated by the ODA, the Registrar of the Royal College of Dental Surgeons of Ontario (RCDS) and the director of the Health Manpower Planning Branch of the Ontario Ministry of Health, received, considered and commented on each study group report which was then forwarded to PGM-COFM and then to COFM (at which time the two deans of Dentistry also had an opportunity to comment) and then to the Ministry of Health. By this means it was hoped that the views of all interested groups could be included in the final report and recommendations.

In 1976-77 study groups examined manpower requirements in oral surgery, oral pathology and for internship in general dentistry. In 1977-78 manpower requirements were examined in community dentistry, dental radiology, endodontics, orthodontics, paedodontics, periodontics, and prosthodontics, and short up-dated reports were compiled for the three areas examined in detail the previous year.

STUDY GROUP ACTIVITIES

The study groups were asked and agreed to carry out

their assessment on the following assumptions: a. that there would be an open annual review of their report and its implications by a similarly representative study group; b. that they should look primarily at the needs of Ontario but nevertheless would document and justify the presence of a significant role in the training programs for out-of-province and out-of-country specialists for service, academic or research purposes; c. that they should propose a training establishment that would satisfy the needs of Ontario in the absence of immigration of fully trained specialists; d. that manpower requirements should be predicted relevant to the present health system, with consideration only of the influence of possible future trends in health care demands and delivery.

The study groups were also asked to give their opinion on the relevance of the training programs to the manpower needs of the province and to suggest possible means of co-ordination of programs to avoid or reduce unnecessary duplication.

STUDY GROUP REPORT FORMAT

Each group was asked to report in a standard form as listed below. To obtain some of the necessary data, each Study Group circulated a questionnaire to all members of the specialty group listed by the RCDS as being in practice in the province.

1. Membership of the study group.
2. Definition of the specialty.
3. Activities of the specialists. Data were requested on approximate time devoted to practice, teaching and research. Procedures shared with other specialties or with general practitioners were to be listed. The proportion of patients seen on referral was requested and the average waiting time for acute and non-acute cases was to be obtained.
4. Perceived changes in activities of the specialty, if any, were to be described.
5. Training requirements for certification as a specialist in the province were to be delineated.
6. Training programs. Currently existing training programs in Ontario and elsewhere in Canada were to be listed, with the number of specialists graduating from each per year. A brief outline of a typical training program was also to be included.
7. Existing manpower and expected attrition. Accurate current data for existing provincial manpower in each specialty was provided by the RCDS, with their geographical and age distributions. From the latter, the expected attrition rate could be calculated.
8. Manpower requirements. Various methods of estimating manpower needs were suggested, and each study group was urged to use as many of these as were possible or applicable.
 - a. Survey of existing specialists to inquire into their

perception of current availability and future needs (from the questionnaire).

- b. Recognition and description by name, specialist and population numbers of sample areas in Ontario where the number of specialists was judged to be (1) ideal to meet the patient need and demand for treatment; (2) inadequate for patient needs; (3) overadequate.
 - c. Data from the questionnaire on waiting time for patient appointments, by geographic area if this varied greatly.
 - d. Comparisons of ratios of specialists: population between Ontario and other jurisdictions in Canada, the U.S.A. or elsewhere.
 - e. Reference to publications on specialist manpower requirements referring to other countries, with appropriate extrapolations, with corrections if necessary, for Ontario.
 - f. Manpower requirements for teaching and research in Canadian faculties of dentistry, to be obtained by communication with the deans.
 - g. Requirements for service and teaching in other countries — the Ontario Ministry of Health has accepted that a small number of specialists may be trained in the province for other parts of the country and for abroad, in particular for underdeveloped nations. Such instances had to be supported with data on the number of specialists trained in Ontario who practise in other provinces or in foreign countries; with information on the lack of training programs in the other jurisdictions.
9. Ontario population correction factor. Each study group was provided with estimates of the expected increase in the population of the province to 1985, from data compiled by the Ontario Ministry of Health.
 10. Conclusions and recommendations. From the estimated manpower requirements and anticipated attrition rates for each specialty, the number of trainees per annum was to be calculated.

A problem common to all dental specialties to some extent has been that an unknown number of Ontario dentists continue to go to the United States for postgraduate training, subsequently returning to the province to practise. Some estimate of the number of people in this category could be obtained from the proportion of current Ontario specialists trained in the States, although clearly there is no certainty that this proportion will continue to be the same. It seems that it has become increasingly easy for Canadian graduates to obtain entry into U.S. postgraduate programs as there is a strong belief in the States that they have produced too many dental specialists in recent years, for example in oral surgery.

A number of the study group reports made some allowance for manpower supply via this educational route, although in the absence of exact figures of the number of Ontario dentists in training in the U.S., the number could only be estimated.

SYNOPSIS OF STUDY GROUP REPORTS* COMMUNITY DENTISTRY

There were 39 specialists in Dental Public Health in Ontario, 26 employed by official health agencies, six by the universities, four by colleges of applied arts and technology and three by the provincial government. It was estimated that the number of specialists annually needed for Ontario and elsewhere lay between a low of six and a high of 14. As the University of Toronto provides the only training program in this specialty in Canada, it was recommended that it should continue to accept between four and 10 trainees each year, to include as in the past a small proportion from outside Canada.

DENTAL RADIOLOGY

There were four specialists in Ontario. Eight people have successfully completed the training program given in the University of Toronto since its inception in 1965, of whom three practise outside Canada. It was considered that the training program should continue to be directed primarily at persons intending to teach the subject in Canadian faculties of dentistry and that one trainee in alternate years would suffice for this purpose.

ENDODONTICS

At present there are no Canadian training programs in this discipline. Twenty-two endodontists were in practice in Ontario in 1977, chiefly concentrated in the Toronto/Hamilton area, with one in Ottawa and two in London. Some procedures were shared with general practitioners, oral surgeons and periodontists. The Study Group recognized a shortage of endodontists for the underserved areas of the province and documented a need for more teachers of the subject in many Canadian dental schools. They therefore recommended the establishment of a training program in the University of Toronto to accept two candidates each year.

GENERAL DENTISTRY INTERNSHIPS

There were 24 dental internship positions in Ontario. The study group described the chief objective of the internship program as being to prepare dental graduates to work more effectively in providing general dental care for patients requiring hospitalization. The majority of young dental graduates seeking internships do so in order that they may subsequently function more effectively as hospital dentists and/or because they intend to enrol in postgraduate studies for which, in Ontario,

there is a mandatory year to be spent first in institutional or general practice. As on average, 28 dentists enter post-graduate studies in Ontario each year; there are insufficient internships available to provide places for all. Approximately one thousand Ontario dentists are on staff at a total of 135 hospitals. To provide two post internship dentists for each of these hospitals, assuming normal attrition rates, would require six additional intern positions. From these conclusions, an additional 10 dental internship positions for the province have been recommended.

ORAL PATHOLOGY

There were eight oral pathologists in Ontario, all on university faculties, of whom seven were active in clinical oral pathology (oral medicine) in teaching hospitals. The study group considered that the economic climate made it unlikely for oral pathologists to practise without a university setting. A number of vacancies for oral pathologists in Canadian dental schools was documented, two of the five Ontario trained oral pathologists now practise in other provinces, and the recommendation was made that two candidates per year continue to be accepted for training.

ORAL SURGERY

In 1977 there were 93 oral surgeons practising in Ontario, an increase of 13 over the previous year. The expected attrition rate was low as the majority of the oral surgeons were in the younger age groups. Concern was expressed by the study group over the number of Ontario graduates being trained in this discipline in the U.S.A. The study group stressed that the number of oral surgeons needed was related to the habits of practice of the general dental practitioners in the area and expressed the view that Ontario general dentists undertake more oral surgery than is performed by their counterparts, on average, in the United States. They considered that a ratio of one oral surgeon to 110,000 of the general population should be aimed at. Some poorly covered areas of the province were recognized and a need for more university teachers was described. The recommendation made was that two trainees per year be accepted by the University of Toronto, a reduction of one from present practice, to cover manpower needs for the province, accepting that some U.S. trained oral surgeons will also return, and to allow for a few out of province and overseas trainees.

ORTHODONTICS

In 1977 there were 150 orthodontists in active practice in Ontario of whom 17 had been added to the register in the previous year. The attrition rate expected was low with only 10 per cent of the orthodontists being over 55 years of age. In an extensive consideration of the need

and demand for orthodontic treatment, it was shown that roughly 50 per cent of Ontario children need orthodontic therapy, 20 per cent having a serious need of it, and that roughly 85 per cent of children referred for treatment did actually receive it. From the questionnaire, 55 per cent of orthodontists in practice considered that they could provide care to more patients, and the primary reason given for this situation was that there were too many orthodontists. In perceived changes in the activities of the specialty, the great increase in productivity resulting from technical developments and increased use of auxiliary personnel was pointed out, together with the effects of the greatly decreased birth rate. The effects of procedures shared with general practitioners and with paedodontists was also described. Some maldistribution of existing manpower was recognized with the larger centres of population having disproportionate numbers, and a number of smaller centres were recognized as being in need of more orthodontists. Waiting time for first examination were, on average, not long. There was a documented need for 12 full-time orthodontists to teach in Canadian dental schools but fiscal constraints made it unlikely that these needs will be met within the next five years. From the above considerations and from comparative data, the study group suggested that an orthodontist: population rates of 1:50,000 would be adequate for Ontario. Twenty seven per cent of Ontario trained orthodontists practise outside the province. The study group recommended that the number of trainees be reduced from 12 per year to between six and eight; two of these to accommodate the anticipated attrition, another group who could reasonably be expected to practise in underserved areas and the remainder for out of province and sponsored foreign candidates.

PAEDODONTICS

The study group have not completed their assessment of manpower requirements in this discipline and are continuing to work on it.

PERIODONTICS

There were 64 periodontists in practice in Ontario in 1977, of whom 14 were in full time university employment with one day per week in practice. Shared procedures were considered to be limited to the treatment of early periodontal disease by general practitioners. The need and demand for periodontal services is believed to be increasing, as more persons retain their teeth longer due to fluoridation and to wider access to preventive dentistry through insurance coverage. Offsetting this to some extent is the perceived increase in periodontal treatment by general practitioners. Fourteen full time periodontists are needed by Canadian dental schools but again fiscal difficulties will probably

delay their appointment. The difference between the need and demand for specialist periodontal treatment was emphasised. The need for additional periodontists, as assessed by local dental societies, was described and some other areas were recognized as underserved by the study group. From various considerations, including comparative data from the United States, the study group recommended that a periodontist: population ratio around 1:150,000 should be aimed at in Ontario. Of the 61 Ontario trained periodontists, eight practise elsewhere in Canada, five in the U.S.A. and three in Mexico. The study group finally recommended an increase in the intake of trainees to the University of Toronto program from four per year to six.

PROSTHODONTICS

Twenty seven prosthodontists were in practice in 1977, of whom nine were in full time university positions and therefore practised clinically for only one day per week. Clinical practice was almost all in an office setting but 3 per cent of the total time was spent in hospitals, mostly in maxillo-facial work. There are many shared procedures with general practitioners. Maldistribution of specialists was reported with only the larger cities having any. An increase in the manpower for service purposes was considered necessary by most practising prosthodontists and the regional disparity increased this need. From these considerations and others, the study group recommended that the training program at the University of Toronto should be reactivated and should accept two trainees per year.

GENERAL DENTISTS

The Dental Sub-Committee of PGM-COFM also recommended to the Ontario Ministry of Health that an examination should be carried out of manpower requirements for general dentists in the province on the grounds that there was some evidence that the number of dentists currently being trained was in excess of need.

DISCUSSION

That the number of dental specialists in training be appropriate to the manpower requirements of the community in which these specialists are going to work is a self evidently acceptable proposition. There can also be little doubt that the number of dental specialists in parts of Canada at least is now reaching a level that is adequate for the patient need and demand for treatment. It is also true that there are many areas in the country that are underserved by dental specialists. These areas are in general those where the population is sparsely distributed. Dental specialists require a large population from whom to draw their patients, and where habitation is sparse, economic reasons deter specialists from establishing their practices. This leads to inequitable opportunities for urban and rural patients to

have access to specialists, but this is a problem for which no solution is readily available and may always be particularly significant in Canada where distances are so great and the population so concentrated. It seems unlikely that over production of specialists will result in a cure for this problem through the market place driving some doctors to smaller communities, although this does happen to a certain extent.

Another major factor in determining manpower needs is the difference between demand and need for treatment, and this difference can change rapidly when financial disincentives are removed by, for instance, the introduction of third party dental care insurance to significant numbers of people in any given population.

In the view of the groups who have examined the situation, there is a real possibility of an excessive number of oral surgeons and orthodontists being in practice in Ontario if present rates of intake into these specialties continue. In the other specialties, no over production was recognized, and in endodontics, periodontics and prosthodontics it was considered that the training facilities and numbers should be increased.

It seems that sooner or later all Canadian provinces will have to undertake similar manpower requirement studies to those that are ongoing in Ontario. It is hoped that this account of their conduct may be of some value in other jurisdictions.

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The assistance and guidance of Dr. J.E. Boone, Department of Pediatrics, University of Western Ontario, and of Dr. B.H. Buchanan, Ontario Ministry of Health, are gratefully acknowledged. Dr. K.F. Pownall of the Royal College of Dental Surgeons of Ontario has been unfailingly helpful in providing statistical data.

*All figures are for 1977.

Applied anatomy of the maxillary sinus

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The maxillary air sinus or antrum (Greek: *antron*, a cave) is also known as the antrum of Highmore, after the English physician, Nathaniel Highmore who described the maxillary sinus in 1651 after treating a maxillary sinus empyema by extracting a canine tooth. Highmore, however, was not the first to identify these sinuses, for Galen (1564-1642) and Leonardo da Vinci (1452-1519) had previously illustrated the presence of air sinuses in the maxillary bones. Da Vinci¹ described the sinuses: "I wish to elevate that part of the bone, the support of the cheek — to demonstrate through the exposed opening, the size and depth of the two cavities which are hidden behind it. The eye, the instrument of vision, is hidden in the cavity above and in that below is the humor which nourishes the roots of the teeth.

"The cavity of the cheek-bone has a resemblance in depth and size to the cavity which receives the eye within it, and in capacity it is very similar to it and receives in its interior some veins through the opening, which

SUMMARY

A review of the anatomy of the maxillary sinus with the clinical implications of its location and the pathological consequences of abnormalities of its respiratory type lining membrane are discussed.

descend from the brain, passing through the sieve (cholorio) (Ethmoid) which discharges into the nose the superfluities of the humors of the head."

The above observations must be regarded as the first scientific description of the maxillary sinuses. Other descriptions of the sinus that preceded that of Highmore were those of Vesalius² in 1543 and Fallopius³ in 1562, while Drake⁴ in 1707 expanded upon Highmore's account of his patient, "a Gentlewoman, who had the Dens Caninus drawn upon the account of Pain, proceeding from an Inveterate Defluction of sharp Humours that had destroyed most of her teeth; who upon thrusting a Silver Bodkin into the Aveolus, was exceedingly frightened to find it pass, as it did, almost to her eyes."

ANATOMY

The maxillary sinus constitutes the largest of the paranasal sinuses, the others being the ethmoid, sphenoid and frontal sinuses (**Fig 1**). The proximity of the maxillary teeth, and especially of their roots, to the maxillary sinus makes the anatomy, physiology and pathology of the sinus of great clinical significance to the practising dentist. Endodontic, periodontic and exodontic therapy administered to the posterior maxillary teeth must accord recognition to the adjacent maxillary sinus.

The pyramidal-shaped maxillary sinus is situated in the body of the maxilla, its base forming the lateral wall of the nose and its apex extending into the zygomatic process. While the sinus is in most instances confined to the maxillary bone, it may in older age expand into the adjacent palatine and zygomatic bones. The capacity of the adult sinus averages 15 ml, but varies from 9.5 to 20 ml between individuals. While the sinus is usually single-chambered, it may be subdivided by bony septa into two or more compartments. Being entirely surrounded by bone, the sinus may only be seen directly if its walls are damaged by trauma, surgery or pathological erosion. It is visualized clinically, however, by radiographs or transillumination. The advent of computerized axial tomography (CAT scans) provides a new and valuable diagnostic tool in distinguishing between normal and abnormal sinus anatomy (Figs 2 and 3). The ability of the CAT Scanner to distinguish between tissues differing in density by as little as four per cent allows accurate assessment of soft and hard tissue lesions of the maxillary sinus.

The respiratory-type epithelium that lines the sinus produces secretions that must be allowed to escape. The usual single opening of the sinus, the ostium, is situated in its base, or medial wall, opening into the middle nasal fossa. Accessory ostia occur in some 30 to 40 per cent of all sinuses. While most often smaller than the primary ostium, accessory ostia may exceed the size of the primary ostium. Usually, the accessory ostium is single, but on occasion, two or three accessory apertures

are found that are variable in their location on the medial wall of the sinus.

The purpose of the maxillary sinus is largely unknown. Much speculation exists as to its function and the sinuses may indeed be basically functionless. Several proposals for their function have been made, among which are the imparting of resonance to the voice, the thermal control (by cooling) of the "nerve centres" (brain, eye, olfactory mucosa), lightening of bone for maintenance of erect head posture, and the secretion of mucus for moistening the nasal fossae. While the principal function of the nasal cavity is to warm and humidify inspired air, in which it is remarkably efficient even in the face of frigid air, the paranasal sinuses, in being cut off from the main air stream, can do little to heat and humidify inspired air.

The sinus is lined by pseudostratified ciliated columnar epithelium, which accounts for many of the pathological lesions found in the maxillary sinus. This respiratory mucosa can produce copious mucus (over 1 litre a day for all the sinuses) that is normally washed by ciliary action towards the ostium where it is discharged into the middle meatus of the nose. Impairment of ciliary function militates against drainage of the sinus, resulting in many forms of sinusitis.

Internal bone resorption of the maxilla (pneumatization) is a highly variable process that accounts for the great variation in size and shape of maxillary sinuses. Differences in bone density and thickness, caused in

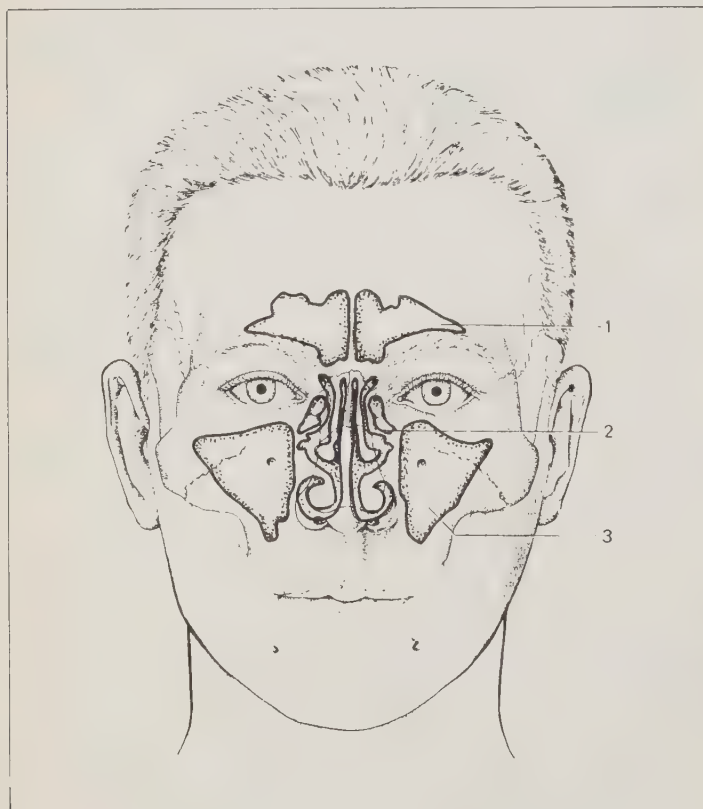


Fig 1 Schematic depiction of paranasal sinuses: (1) frontal sinus, (2) sphenoid sinuses, (3) maxillary sinus.



Fig 2 Computerized axial tomographic scan radiograph of the skull of a normal 62 year old male in the orbital-meatal plane at a level between the foramen magnum (F.M.) and external acoustic meatus (EAM) revealing the clearly radiolucent maxillary sinuses (arrowed) in the regions of the infra-orbital foramina. Note further the deflection from the midline of the nasal septum.

part by masticatory stresses and growth processes, result in differences in the magnitude of pneumatization. The hollowing out of the maxillary bone may be an architectural response to muscle and masticatory stresses, according to Wolff's Law.*

The weight of the maxillary bone is lightened by the presence of its sinus without concomitant loss of buttressing strength necessary to sustain masticatory stresses. The size of the maxillary sinus is remarkably variable and appears to have little correlation to any supposed function. Keith,⁵ in establishing the relationship of the eruption of the permanent molar teeth to the expansion of the maxillary sinus, observed an inverse relationship between the size of the nasal inferior meatus and the maxillary sinus. In a study of variations of the size of the maxillary sinus, Shea⁶ noted that maxillary sinus capacity decreases absolutely and directly in the Inuit with decreases of the average ambient temperature in which they live. He further observed in a comparison of maxillary sinus size among different racial groups that this sinus occupies greater proportions of the maxilla in Mongoloids and Caucasoids than it does in the Inuit.**

GROWTH

The size of the maxillary sinus varies considerably, not only between individuals, but also in the same individual at different periods of life (Fig 4). The maxillary sinus is the only radiographically identifiable paranasal sinus present at birth, and is classically described as miniscule in the neonate, but occupies a significant portion of the tiny body of the neonatal maxilla (Fig 5). In infants, the floor of the sinus is level with the middle meatus. Expansion of the sinus into the body of the maxilla is initially slow, increasing at 2 mm per annum horizontally and 3 mm per annum vertically, during childhood.⁷ Growth accelerates towards puberty, thereafter the sinus enlarges rapidly until 20 years of age. The risk of creating an oro-antral fistula when extracting maxillary teeth is less likely in children with their smaller sinuses than in adults. The inadvertent displacement of teeth or roots into the maxillary sinus as a result of extraction accidents is also uncommon in the young.

The maxillary sinus does not stop growing in adulthood, and by expanding within the maxilla, the sinus can eventually encroach upon the alveolar bone between the roots of the maxillary teeth. The enlargement of the

sinus is more likely to occur when teeth are extracted in early adulthood. There is apparently some sexual dimorphism in sinus expansion, with females exhibiting larger sinuses than males.⁸ Further, the sinuses of the left side are generally larger than those of the right side. It is a common experience in examining dental radio-

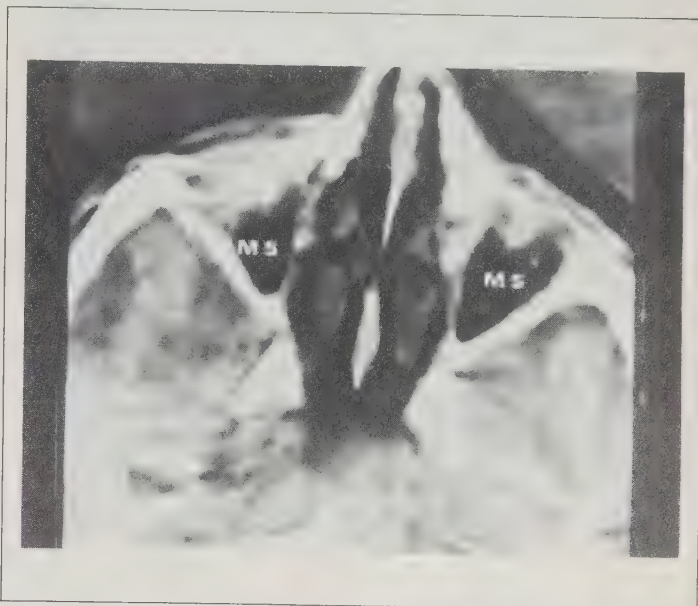


Fig 3 Computerized axial tomographic scan radiograph of the same patient as Fig 2. The orbital-meatal plane "cut" was taken at a level just above nasion. Note discrepancy in sizes of the left and right maxillary sinuses (MS) at this level.

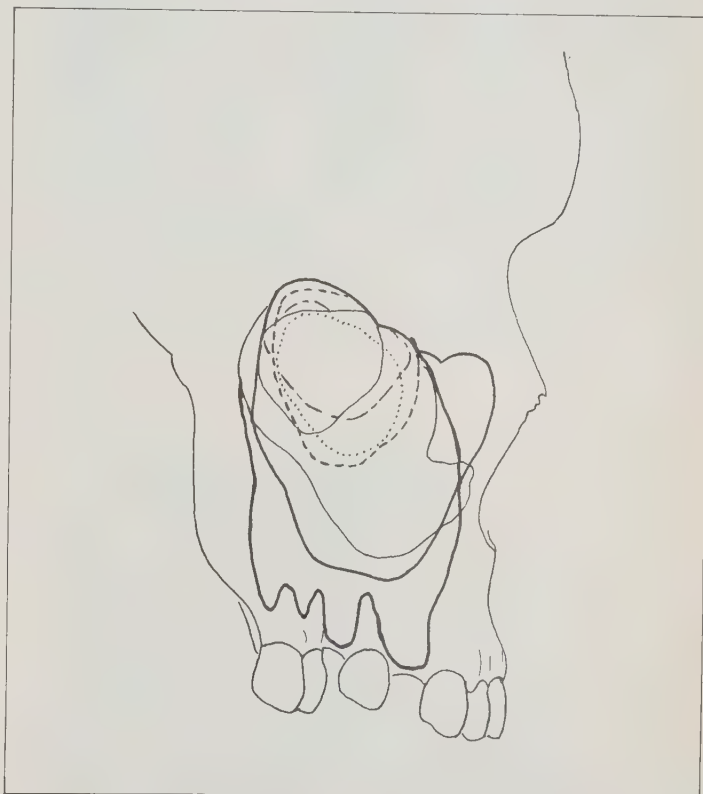


Fig 4 Schematic outlines of growth of maxillary sinus at different ages. (Based on Hajek, M. in Heitger, J.D. and Hansel, F.K. Pathology and treatment of the inflammatory diseases of the nasal accessory sinuses. Ed 5. Vol. 1, St. Louis, Mosby, 1926.)

*Wolff's Law states: changes in the function of a bone are attended by alterations in its structure.

**Among the early predecessors of man, the maxillary sinus achieved enormous proportions in *Australopithecus boisei*, whose inflated maxillae, greatly pneumatized by their sinuses, formed a prominent feature of their orthognathic faces (Tobias) 1967.

graphs to see the extensive radiolucency of the maxillary sinus (**Figs 6 and 7**), and care must be taken to distinguish this normal radiolucency from the abnormal radiolucency of large dental cysts. The bony septa that often partially subdivide the sinuses may contribute to the radiographic illusion of pathological cysts. The greater the extent of the maxillary sinus, the thinner are the bony walls of the alveolar sockets so that the roots of teeth in older individuals may be separated from the sinus by paper thin bone (**Fig 8**). Periapical or periodontal abscesses of these invaginating roots easily perforate into the maxillary sinus, causing a sinusitis.

Not only can there be an alveolar extension, but the sinuses may occasionally expand into palatal bone as well. This phenomenon is usually unilateral, resulting in great asymmetry of sinus size. The presence of a cleft palate greatly influences the size of the maxillary sinus. In an extensive study of 301 cleft palate patients, Nowak and Mehls⁸ found that maxillae afflicted with clefts have significantly smaller sinuses than normal maxillae. The reduced size of the bodies of clefted maxillae would naturally account for their smaller sinuses.

PATHOLOGY

Maxillary sinusitis that results from inflammation of the mucous membrane lining the sinus is one of the most frequent causes of referred dental pain. The source of sinusitis pain is often perceived to be the posterior maxillary teeth. Although infection of the teeth themselves may be a cause of sinusitis, the most frequent cause of sinusitis is the common cold, followed by allergies. In only one out of every five cases is the cause of sinusitis of odontogenic origin. Every dental clinician is acquainted with the phenomenon of perfectly healthy teeth, as determined radiographically and clinically, nonetheless being the presumed source of dental pain

as experienced by the patient who is usually suffering from a heavy cold. The fact that the superior alveolar nerves that supply the maxillary teeth pass along the side walls of the maxillary sinus and may be stimulated by an inflamed mucosa accounts for the phenomenon of pain referred to the teeth. An aid to diagnosing referred maxillary sinus pain is the observation of increased severity of pain when lying down and also when leaning forward. Intra-oral transillumination with a strong light may reveal an opacity of the affected sinus, to be contrasted with the lucency of the normal side. Radiographs may reveal a fluid level or a thickened lining of the sinus or radiopaque polyp masses (**Fig 9**). Correctly diagnosing the source of such referred dental pain will prevent unnecessary treatment being rendered to the maxillary teeth.

The fact that the ostial opening of the maxillary sinus is located on its medial wall well up from the floor (**Fig 10**), accounts for the poor drainage of the sinus. The ciliary action of the lining respiratory mucosa is able to move a small foreign body in the sinus through a patent ostium in less than 10 minutes. Sinus infection reduces this protective ciliary function. This poor drainage situation is aggravated by lying down, since it has been shown that the size of the sinus ostium becomes smaller as a person changes from an upright sitting to a reclining position. Blockage of escape of mucous secretions causes pressure to bear on the surrounding walls and nerves and creates the severe pain of sinusitis and referred dental pain. A vicious circle is in fact created by the blockage of escape of mucus, since the air flow to the maxillary sinus is cut off and the mucociliary mechanism that clears the mucus is inhibited by oxygen-lack. Persistence of this condition produces chronic sinusitis that ultimately may only be alleviated by surgical intervention. Irrigation of the sinus to open an occluded ostium may be undertaken, supplemented by de-

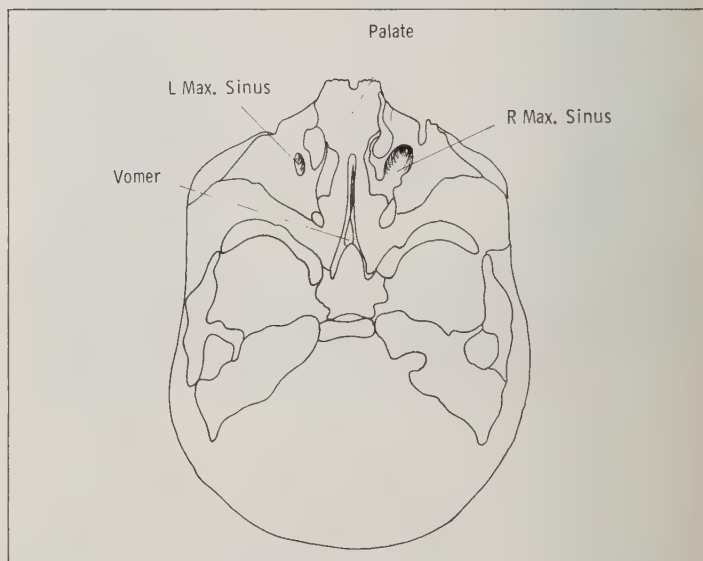
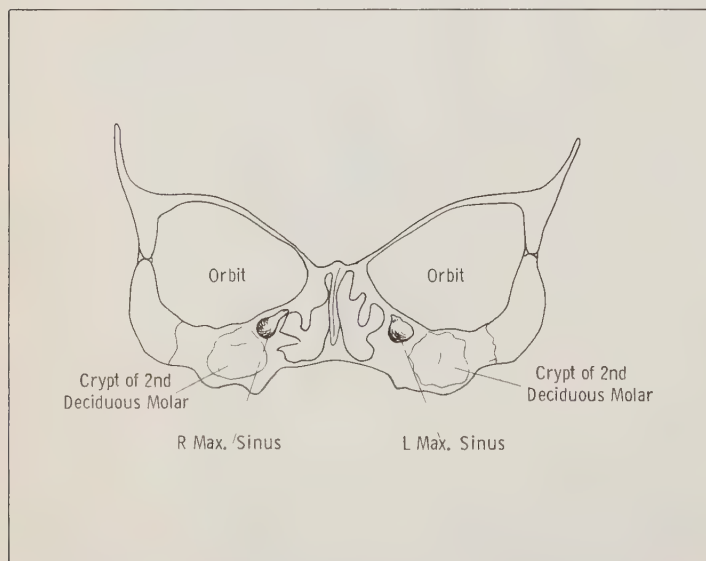


Fig 5 A and B Horizontal and vertical sections of neonatal skull demonstrating the different levels of the left and right maxillary sinuses.

congestants, antihistamines, mucolytic agents and antibiotic therapy.

Chronic sinusitis may either be of the hypertrophic type, producing polypoid masses, or the atrophic or sclerosing type. The polyps produced in the hypertrophic type of sinusitis often recur when removed, while the atrophic type often predisposes to metaplastic squamous epithelium, rather than the normal ciliated columnar epithelium.

An oro-antral fistula or opening between the mouth and the maxillary sinus is the most frequent surgical involvement of the sinus, caused most commonly by extraction of upper molar teeth, especially in the elderly, where an enlarged sinus and ankylosed roots predispose to maxillary tuberosity or alveolar bone fracture, creating an oro-antral fistula. It is not always apparent that an oro-antral fistula has been created, especially if the extraction was straight-forward. Since the blood clot in the socket frequently forms a seal, and the socket usually heals normally, the existence of a fistula remains unsuspected. However, symptoms of a fistula may develop immediately or some time later. In one study,⁹ 23 per cent of patients who had developed an oro-antral fistula experienced no symptoms.

The signs and symptoms of an oro-antral fistula are varied and numerous, including regurgitation of liquids from the mouth into the nose (the most common symptom), an alteration in vocal resonance, an inability to blow out the cheeks, or air bubbling through the fistula, particularly when the nose is occluded and the patient asked to breathe out.

Once a fistula has been created, infection of the maxillary sinus ensues due to contamination by oral organisms. This sequela dictates that an oro-antral fistula must always be closed off if maxillary sinusitis is to be avoided. Such closure may occur spontaneously if the post-extraction blood clot remains intact and normal wound



Fig 6 Lateral view radiograph of the skull of a 12 year old girl, demonstrating the extensive pneumatisation of her maxilla (arrows).



Fig 7 A Waters' view radiograph of an adult depicting the loculated nature of the maxillary sinuses, subdivided by partial septa (arrows).



Fig 8 Periapical radiograph depicting maxillary sinus extension into the alveolar bone site of the extracted maxillary first molar tooth, a retained root of which is faintly discernible (arrow).

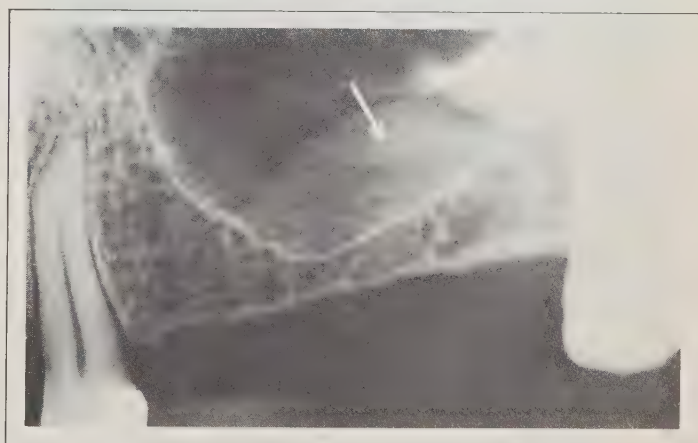


Fig 9 Periapical radiograph depicting maxillary sinus extension into edentulous alveolar bone. The radiopaque shadow in the floor of the sinus is a mucous retention cyst (arrow).

healing occurs and no infection supervenes.

To treat an oro-antral fistula, adjacent palatal or buccal mucous membrane should be drawn over the extraction socket and sutured to establish a clot in the socket. The socket should never be packed with any foreign materials. Antibiotic therapy should be commenced immediately and continued for the next 10 days. The patient should be instructed not to blow his/her nose until healing has occurred.

The unfortunate displacement of an extracted tooth or root into the maxillary sinus would in most instances require an antrostomy operation, known better as the Caldwell-Luc operation. This operation, the approach to which is through the maxillary buccal sulcus of the mouth, is best performed by an oral surgeon in a hospital setting. The Caldwell-Luc antrostomy operation is also performed by ear, nose and throat surgeons in treating irreversible disease of the mucosa of the maxillary sinus such as the removal of polyps that often grow from the membrane lining of the sinus.

The Caldwell-Luc operation is relatively infrequently performed these days because most of the mucosal lesions of the maxillary sinus respond favourably to antibacterial and antiallergic drugs, assisted by judicious antral puncture and irrigation, as illustrated in

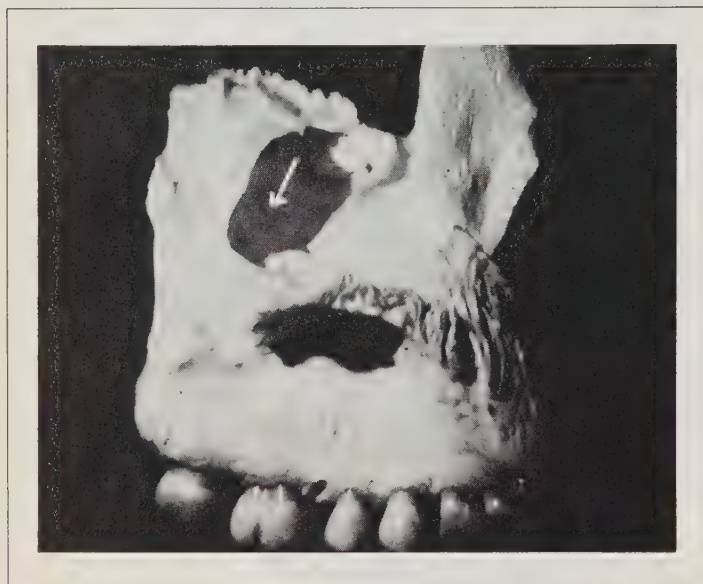


Fig 10 The ostium of the maxillary sinus (arrowed) in the isolated maxilla. This large opening is much reduced in size to as little as 20 mm² in the living state due to overlapping coverage of the adjacent bones and mucosa.

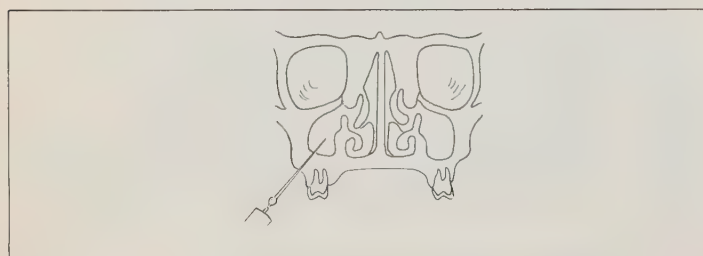


Fig 11 Schematic depiction of antral puncture by irrigating syringe in treatment of maxillary sinusitis.

Fig 11. Such a conservative approach is to be favoured, since stripping the mucosal lining of the maxillary sinus may result in trauma to the superior alveolar nerves and blood vessels, with consequent devitalization of the associated maxillary teeth. Such devitalization would necessitate endodontic treatment of the affected teeth, to avoid their becoming abscessed.

Carcinoma of the maxillary sinus is not an uncommon disease, having an incidence of 1:200,000 persons per annum.¹⁰ It occurs most frequently between 50 and 70 years of age, and is twice as common in males as in females. Most maxillary sinus carcinomas (90 per cent of cases) are of the squamous cell type, with adenocarcinomas and sarcomas of rare occurrence. The maxillary sinus is also not infrequently the site of metastatic carcinoma. These tumours give rise to symptoms similar to those of sinusitis. The maxillary sinus is also not infrequently the site of metastatic carcinoma. The maxillary sinuses constitute the path of least resistance for growth of maxillary cysts and neoplasms. Even large tumours may be present without noticeable expansion of the maxilla. Since growth of tumours within the maxillary sinus is not concentric, their site of origin cannot be established by determining their epicentre. These tumours may give rise to symptoms simulating sinusitis. Because of this, diagnosis of malignancy of the maxillary sinus is often delayed and the tumour frequently reaches devastating proportions before it is recognized. Certainly the detection of a radiopacity in the maxillary sinus when examining panoramic radiographs, even if there are no symptoms, should alert the practitioner to the possibility of abnormal growths within the sinus, and appropriate referral action should be taken.

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Overfilling and refilling monkey's pulpless teeth

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ABSTRACT

Root canals of monkey's pulpless teeth were filled or overfilled and refilled with calcium hydroxide in distilled water. The histological results, obtained six months later, were better in the overfilling-refilling group, which showed closure of the apical foramen by hard tissue deposition in 65 per cent of the specimens.

The literature shows us that among the different root canal filling materials, calcium hydroxide is the best for stimulating the deposition of hard tissue in the apical foramen after endodontic treatment.^{1,4} Even though some good results have been reported with calcium hydroxide,^{5,6} these have been refuted by others that showed unfavourable results.^{7,8} In view of these disagreements, we started a series of studies to find out the dif-

ferent factors that may alter favourably or unfavourably the results of treatment with calcium hydroxide, in order to improve the use of this material.⁹⁻¹²

This work is one of a series of experiments carried out on pulpless teeth. The objective is to study the effect of overfilling and refilling of monkey's pulpless teeth with calcium hydroxide.

MATERIAL AND METHOD

Forty roots of two adult monkeys' teeth (*Cebus apella*) were used. The pulp chambers of all teeth were opened, the pulps removed, and the canals left open to the oral environment for 30 days. The root canals were then instrumented under abundant irrigation with 0.05 per cent sodium hypochlorite solution and rubber dam. After drying the canals with paper points, they were dressed for two days with Furacin-parachlorophenol. Afterwards, the dressing was removed and the canals instrumented 1 mm beyond the apical foramen, up to No. 40 instrument. Half of the canals were immediately over-filled with calcium hydroxide in distilled water. The other 50 per cent were dressed with corticosteroid-antibiotic¹³ for seven days before filling with calcium hydroxide, up to the limit of the apical foramen.

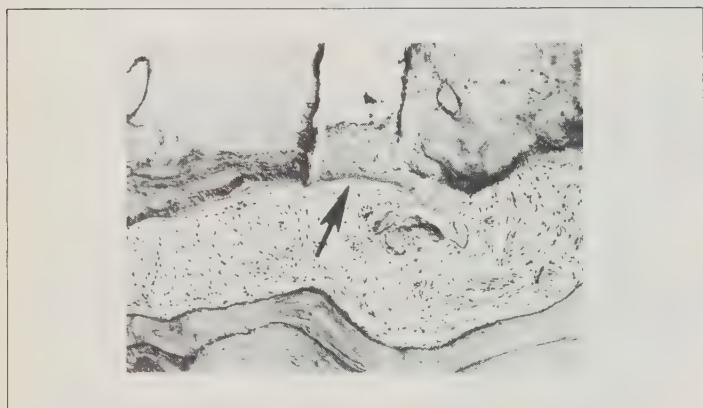


Fig 1 Root canal overfilled and refilled with calcium hydroxide: observation period, 6 months. There is closure (arrow) by the deposition of cementum. (Haematoxylin and eosin stain. Original magnification X 100).

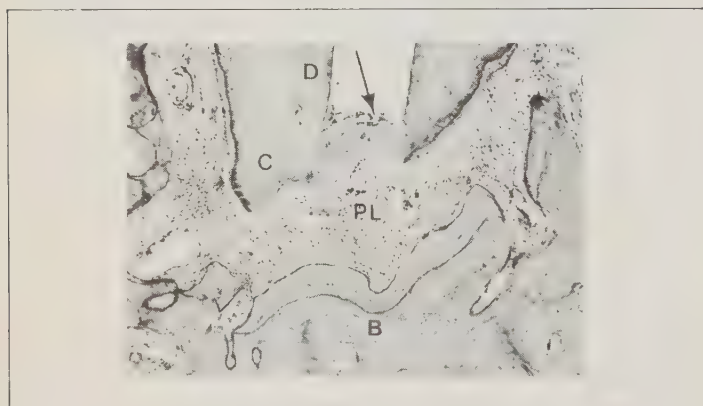


Fig 2 Root canal overfilled and refilled with calcium hydroxide: observation period, 6 months. A regular and thin layer of cementum (arrow) completely walled off the root canal. D-dentin. C-cementum. PL-periodontal ligament. B-bone. (Haematoxylin and eosin stain. Original magnification X 40).

Table 1

Histologic evaluation of root canal treatment		
Results	Filling	Overfilling and refilling
Closure	7	13
Partial closure	5	6
No closure	8	1
No. of samples	20	20

The results obtained in the overfilling-refilling group were better than the ones of the filling group and are in agreement with several other clinical studies.^{5, 16, 17} These results were also a little better than those obtained by us in another experiment with calcium hydroxide in a non-soluble water vehicle.¹⁵ It is possible that this might have been due to the ingrowth of a connective tissue in better conditions to receive the applications of the calcium hydroxide as opposed to the situation when only a corticosteroid-antibiotic dressing was employed. As we demonstrated in another work in this series,¹⁰ the calcium hydroxide in overfillings, besides being rapidly reabsorbed, stimulates the invagination of connective tissue into the root canal, which may even exert the function of a pulp stump. It is known fact that with the presence of a pulp stump, the possibility of obtaining a biological closure is higher.⁶

Considering the results of the present work and those obtained with calcium hydroxide in a water insoluble vehicle,¹⁵ it is clear that another variant should be analyzed. This variant should be the overfilling with calcium hydroxide in a water soluble vehicle, as a dressing for 15 days, and its replacement by a calcium hydroxide in a water insoluble vehicle.

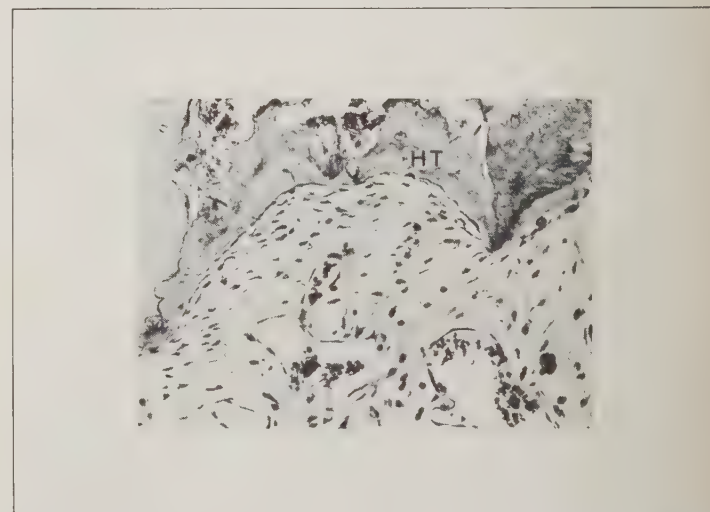


Fig 3 Higher magnification of Fig 2. Biological closure by the deposition of a hard tissue bridge (HT). (Haematoxylin and eosin stain. Original magnification X 40).

Fifteen days after the overfilling with calcium hydroxide, the filling material was removed with endodontic instruments and replaced by a new calcium hydroxide, but this time only up to the limit of the apical foramen. All the teeth were sealed with zinc oxide-eugenol cement and amalgam.

Six months later the animals were killed and the tissues removed. The tissues were fixed in 10 per cent neutral buffered formalin solution and demineralized in formic acid-sodium citrate solution. Serial sections at 6 microns were stained with haematoxylin and eosin and examined under light microscopy.

RESULTS

Root canals overfilled and refilled with calcium hydroxide

Of the 20 specimens treated, 13 exhibited complete apical closure by the deposition of cementum (Figs 1, 2, 3 and 4). These cases did not show any areas of resorption of cementum or bone tissue. The periodontal ligament exhibited a normal thickness and no presence of inflammatory reaction was observed.

The bridge of hard tissue had varied forms and thicknesses. Sometimes it was thin, regular and located only at the apical foramen (Figs 2 and 3). At other times it was thick but irregular and projected into the periodontal ligament, enlarging the size of the teeth roots (Fig 4).

Six specimens exhibited partial closure. These cases showed a mild to moderate number of chronic inflammatory cells in the periodontal ligament, which was of a normal thickness. No areas of resorption of cementum or bone tissue were present (Figs 5 and 6).

Only one specimen showed absence of hard tissue deposition. In this case, the periodontal ligament was somewhat thickened and the chronic inflammatory reaction was intense.

Root canals filled with calcium hydroxide

Seven cases with complete biological closure and with morphological features similar to the previous experimental group were observed.

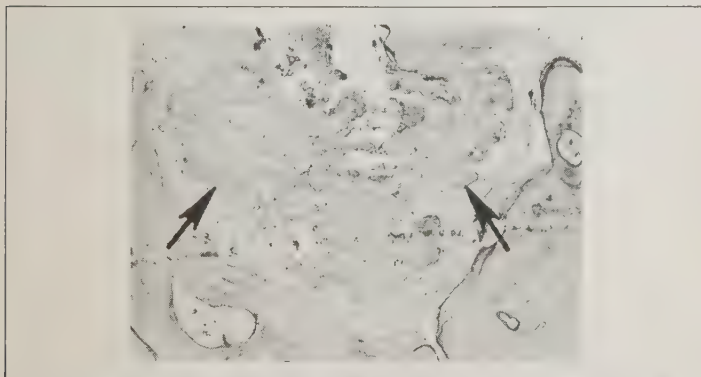


Fig 4 Root canal overfilled and refilled with calcium hydroxide: observation period, 6 months. An irregular and thick bridge of cementum (arrows) completely closed the apical foramen. (Haematoxylin and eosin stain. Original magnification X 40).

In five cases, the cementum deposition was partial, leaving a connection between the periodontal ligament and the root canal. In these cases, the chronic inflammatory reaction was moderate or intense and more concentrated near the apical foramen. Some small areas of resorption of the bone tissue were noted, but the same was not found in relation to the cementum.

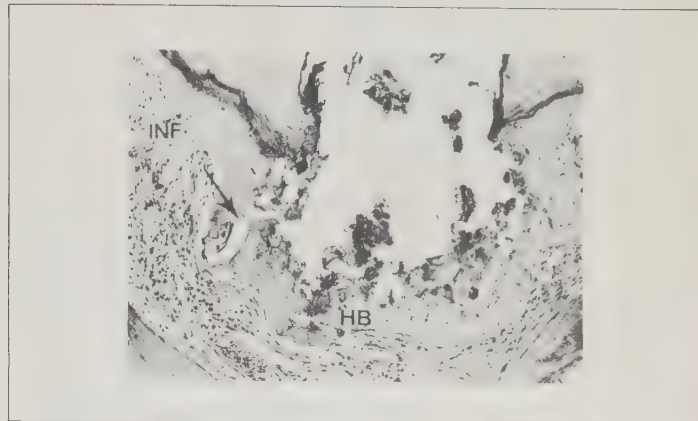


Fig 5 Root canal overfilled and refilled with calcium hydroxide: observation period, 6 months. The hard tissue bridge (HB) is not complete (arrow). There is a mild chronic inflammatory reaction (INF) in the periodontal ligament. (Haematoxylin and eosin stain. Original magnification X 100).

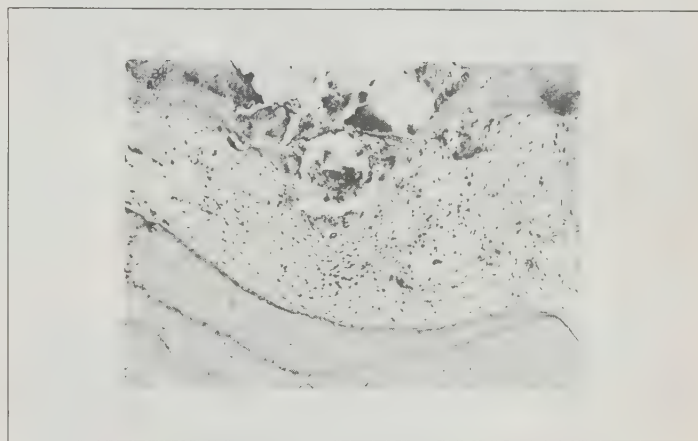


Fig 6 Root canal overfilled and refilled with calcium hydroxide: observation period, 6 months. There is a partial closure and a mild chronic inflammatory reaction in the periodontal ligament. (Haematoxylin and eosin stain. Original magnification X 100).

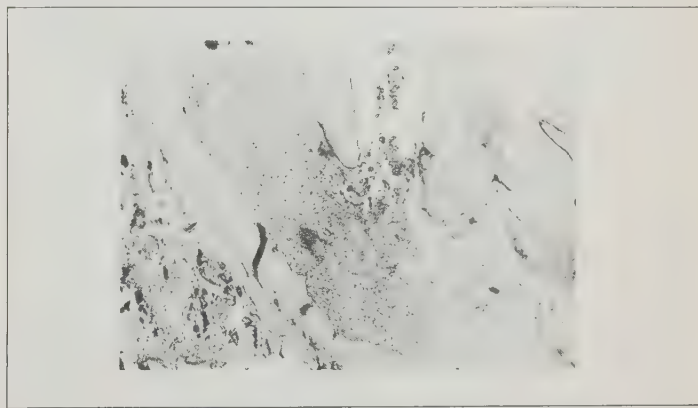


Fig 7 Root canal filled with calcium hydroxide: observation period, 6 months. No closure. There is a severe chronic inflammatory reaction in the periodontal ligament. (Haematoxylin and eosin stain. Original magnification X 40).

Eight specimens did not show biological closure. Of these, five exhibited ingrowth of connective tissue and a deposition of cementum on the root canal walls. Both the ingrown tissue and the periodontal ligament were moderately infiltrated by chronic inflammatory cells. The last three specimens did not show invagination. A small deposition of cementum near the apical foramen and an intense chronic inflammatory reaction on a thickened periodontal ligament were the histological features observed (Fig 7).

A summary of the results observed in the two experimental groups can be seen in Table 1.

DISCUSSION

Under the experimental conditions of this work, we treated teeth with a highly inflamed periapical tissue because the root canals were left exposed to the oral environment for 30 days after the pulpectomy. It is known that calcium hydroxide does not act well in the presence of debris or highly inflamed tissue.^{6,14} Considering this fact and the results of previous work,⁹ we applied two dressings, one of them with corticosteroid-antibiotic, for seven days after the over-instrumentation. The ob-

jective of using the corticosteroid-antibiotic dressing for seven days was to obtain a less inflamed connective tissue to receive the calcium hydroxide. Although it is known that better results are obtained with the use of this dressing,⁹ this procedure is not the ideal one for the type of calcium hydroxide utilized, as the percentage of complete biological closure was only about 35 per cent. Previous results have shown that using calcium hydroxide in a vehicle not soluble in water produces better results than with the soluble one.¹⁵

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Dr. Holland is professor and chairman, and Drs. Souza, Nery, Bernabé, Mello and Otoboni Filho are assistant professors in the Department of Endodontics, Faculdade de Odontologia de Araçatuba, Estado de Sao Paulo, Brazil.

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July/juillet

Canada

Canadian Dental Association, 1980 National Convention, Halifax, Nova Scotia, July 13-16, 1980. Contact: Dr. T.D. Ingham, Nova Scotia Dental Association, P.O. Box 604, Halifax, N.S. B3J 2R7.

L'Association Dentaire Canadienne, Congrès national 1980, Halifax, Nouvelle-Écosse, 13-16 juillet 1980. Pour renseignements: Dr T.D. Ingham, Association Dentaire de la Nouvelle-Écosse, B.P. 604, Halifax, N.-É. B3J 2R7.

June/juin

Alberta Dental Association Annual Meeting, Lethbridge Lodge Hotel, Lethbridge, Alberta, June 11-13, 1980. Contact: Dr. L.M. Evans, 2910-20 Avenue South, Lethbridge, Alta. T1K 3M5. Phone: (403) 328-2316.

Comprehensive Clinical Course on Nitrous Oxide Sedation, Vancouver, British Columbia, June 13-15, 1980. Contact: Faculty of Dentistry, The University of British Columbia, Continuing Dental Education, 105-2194 Health Sciences Mall, University Campus, Vancouver, B.C. V6T 1W5.

The Royal College of Dentists of Canada, Annual meeting and convocation, Toronto, Ontario, June 19-21, 1980. Contact: Dr. J.E. Speck, 170 St. George Street, Suite 614, Toronto, Ont. M5R 2M8.

The Ontario Society of Preventive Dentistry, Seminar & Workshop, Constellation Hotel, Toronto, Ontario, June 20-22, 1980. Contact: Dr. Brock Rondeau, 648 Huron Street, Ste. 201, London, Ont. N5Y 4J8.

Canadian Academy of Restorative Dentistry Annual Scientific Sessions, Chateau Halifax, Halifax, Nova Scotia, July 11-12, 1980. Contact: Dr. D.C.T. MacIntosh, Scientific Chairman, 200 Medical Arts Building, 5880 Spring Garden Rd., Halifax, N.S. B3H 1Y1.

Canadian Academy of Prosthodontics, Halifax, Nova Scotia, July 11-12, 1980. Contact: Dr. B.M. Jackson, secretary-treasurer, 22-22 Water St. South, Kitchener, Ont. N2G 4K4.

Canadian Academy of Endodontics 1980 Annual Meeting, Chateau Halifax, Halifax, Nova Scotia, July 12-13, 1980. Contact: Dr. Tom Larder, 5991 Spring Garden Road, Halifax, N.S. B3H 1Y6.

The 1980 Annual Meeting & Scientific Sessions of the Canadian Association of Orthodontists, Chateau Halifax, Halifax, Nova Scotia, July 13-16, 1980. Contact: Dr. Wayne Barro, 599 Portland Street, Dartmouth, N.S. V2W 2M5. Phone: (902) 434-2177.

Canadian Dental Hygienists' Association, 1980 Convention, Halifax, Nova Scotia, July 14-16, 1980. Contact: Mrs. Kim McGrail, 3 Beech Street, Bedford N.S. B4A 1T1.

1980 AHA/CHA Convention & Exhibition, Montreal, Quebec. Convention headquarters will be Queen Elizabeth Hotel for C.H.A. and headquarters for A.H.A. will be Place Bonaventure & Chateau Champlain. Exhibition headquarters will be Place Bonaventure, July 28-31, 1980. Contact Mr. Paul Brown or Mrs. Joan Roche, phone: (613) 238-8005.

September/septembre

Canadian Dental Association Board of Governors Meeting, Four Seasons Hotel, Ottawa, September 26-27, 1980.

November/novembre

Toronto Academy of Dentistry, 1980 Winter Clinic, Royal York Hotel, Toronto, Thursday November 27, 1980. Contact: Academy of Dentistry, 234 St. George Street, Toronto, M5R 2P2. Phone: (416) 967-5649.

The Canadian Association of Oral and Maxillofacial Surgeons 1980 Clinical Symposium on Current Concepts in Temporo Mandibular Joint: Diagnosis and Management, Harbour Castle Hilton, Toronto, Ontario, November 1-3, 1980. Contact: Dr. S.J. Levitz, #212-77 Queensway West, Mississauga, Ont. L5B 1B7.

International

June/juin

Eighth International Conference on Oral Biology, Tokyo, Japan, June 1-3, 1980. Its theme will be: Oral Disease Prevention — its implications and applications. An interesting study tour program in Japan, China and Thailand is being arranged in connection with the conference. Contact: Dr. George S. Beagrie, University of British Columbia, Faculty of Dentistry, 2075 Westbrook Place, Vancouver, B.C. V6T 1W5.

The 58th General Session of the International Association for Dental Research, Royal Hotel, Osaka, Japan, June 5-8, 1980. Contact: Yojiro Kawamura, chairman I.A.D.R. Organizing Committee, School of Dentistry, Osaka Uni-

versity, 4-3-48 Nakanoshima, Kita-ku, Osaka, Japan.

Symposium on the Prevention in Stomatology, Dolny Kubin, Czechoslovakia, June 5-7, 1980. Contact: Prim. MUDr. V. Tázandlak, Dunz — Dolny Kubin, Nemocnična ul. 4, 026 14 Dolný Kubin, Czechoslovakia.

International Congress on Implantology and Biomaterials in Stomatology, Kyoto, Japan, June 9-10, 1980. Contact: Prof. H. Kawahara, International Congress of Implantology and Biomaterials in Stomatology, c/o Kyoto International Conference Hall, Takaragaike, Sakyo-ku, Kyoto 606, Japan.

The Marin County Dental Society, French Polynesia (Four Islands), June 15-17, 1980. Contact: Dr. James H. McCray, 231-B Flamingo Road, Mill Valley, CA 94941, U.S.A.

Seventh International Conference on Oral Surgery, Trinity College, Dublin, Ireland, June 23-26, 1980. Contact: Professor I.A. Findlay, Chairman, Organizing Committee, Seventh International Conference on Oral Surgery, 12 Pembroke Park, Dublin 4, Ireland.

86th Meeting of the American Dental Society of Europe, Stratford-upon-Avon Hilton, Stratford-upon-Avon, England, June 24-28, 1980. Contact: The Secretary, Dr. Brian J. Parkins, 57 Portland Place, London W1N 3AH, England.

Fifth International Congress of Dento-Maxillo-Facial Radiology, Portland, Oregon, U.S.A., June 28-July 2, 1980. Contact: Dr. Walter H. Fox, 1400 Mill Street, Eugene, OR 97401, U.S.A.

The Academy of General Dentistry (AGD), Chicago, 28th Annual General Meeting being held at Town & Country Hotel, San Diego, California, U.S.A., June 28-July 2, 1980. Contact: Ann McCarry Kilkuskie, phone: (312) 440-4300.

July/juillet

Fifth Congress of the International Association of Dentistry for the Handicapped, Jerusalem, July 6-11, 1980. Contact: Secretariat, Fifth Congress of the International Association of Dentistry for the Handicapped, P.O. Box 3473, Tel Aviv, Israel.

British Dental Association Centenary Meeting, London, England, July 10-11, 1980. Contact: R.B. Allen, secretary, British Dental Association, 64 Wimpole Street, London W1M 8AI, England.

Israel Dental Association's Interna-

tional Meeting, Tel Aviv, Israel, July 13-19, 1980. Contact: Dr. S. Perlmutter, Israel Dental Association, 49 Bar-Kochba Street, Tel Aviv, Israel.

Fourth International Symposium on the Prevention & Detection of Cancer, Wembley Conference Centre, London, England, July 26-31, 1980. Contact: Fourth International Symposium on Prevention & Detection of Cancer, Room 1909, 375 Park Avenue, New York, N.Y. 10022, U.S.A.

August/août

Fourteenth Annual Black Hills Dental Seminar, Rapid City, South Dakota, U.S.A., August 1-7, 1980. Contact: Ms. Jean C. Cory, P.O. Box 1580, Rapid City, SD 57709, U.S.A.

New Zealand Dental Association Jubilee Conference 1905-1980, Dunedin, New Zealand, August 25-29, 1980. Contact: The Conference Secretary, P.O. Box 647, Dunedin, New Zealand.

September/septembre

Fédération Dentaire Internationale, 68th Annual World Dental Congress, Hamburg, Germany, September 2-7, 1980. Contact: Allan's Travel Service Ltd., Ste. 804, 56 Sparks St., Ottawa, Ont. K1P 5A9.

International Association for Orthodontics, Reno, Nevada, September 3-7, 1980. Contact: Ms. Joanna Carey, 645 N. Michigan Avenue, Chicago, IL 60611, U.S.A.

American Association of Oral and Maxillofacial Surgeons, San Francisco, September 5-9, 1980. Contact: Mr. Bernard J. Degen II, Suite 930, 211 East Chicago Avenue, Chicago, IL 60611, U.S.A.

Federation of Prosthodontic Organizations, San Francisco, September 5-9, 1980. Contact: Mr. Eric Bishop, Suite 1636, 211 East Chicago Avenue, Chicago, IL 60611, U.S.A.

Federation of Prosthodontic Organizations, Chicago, Illinois, U.S.A., September 15-16, 1980. Contact: Mr. Eric M. Bishop, Suite 1636, 211 East Chicago Ave., Chicago, IL 60611, U.S.A.

Genoa International Fair — 10th Exponential, Genoa, September 24-27, 1980. Contact: Fiera di Genova, P. le J.F. Kennedy, 16129 Genova.

American Society of Psychosomatic Dentistry and Medicine, San Francisco, September 25-28, 1980. Contact: Mr. Leo Wollman, 2802 Mermaid Avenue, Brooklyn, NY 11224, U.S.A.

October/octobre

Third National Convention and III International Conference of Oral Health, Lima, Peru, October 1-4, 1980. Contact: Dr. Gilberto Dominguez, Av. Benavides 264-902, Lima 18, Peru, South America.

The American Academy of Implant Dentistry, 29th Annual Scientific/Educational Program, New Orleans, Louisiana, U.S.A., October 7-11, 1980. Contact: The American Academy of Implant Dentistry, 515 Washington Street, Abington, Mass. 02351, U.S.A. Phone: (617) 871-3691.

The American Academy of Periodontology 66th Annual Session, Stouffer's Riverfront Towers, St. Louis, Missouri, October 8-11, 1980. Contact: The American Academy of Periodontology, 211 East Chicago Avenue, Room 924, Chicago, IL 60611, U.S.A.

International College of Dentists Annual Session, New Orleans Hilton, October 8-13, 1980. The U.S.A. Section Convocation and Banquet, Saturday October 11, 1980. Reservations may be made by sending a cheque for \$25 per person to the International College of Dentists, 3138 Commodore Plaza, Miami, FL 33133, U.S.A.

Caribbean Atlantic Regional Dental Association Convention, Hilton Hotel, Barbados, October 8-14, 1980. Contact: Mr. Norman L. Hope, Convention Chairman, P.O. Box 95, Bridgetown, Barbados, W.I.

American Society of Dentistry for Children, New Orleans, October 9-11, 1980. Contact: Ms. Dorothy J. McCord, Suite 920, 211 East Chicago Avenue, Chicago IL 60611, U.S.A.

121st Annual Session of the American Dental Association, New Orleans Hilton, New Orleans, U.S.A., October 11-15, 1980. Contact: American Dental Association, 211 East Chicago Avenue, Chicago, IL 60611, U.S.A.

Eighth International Uruguayan Dental Congress, Second Buccal-Maxillofacial Congress of Cono Sur, and Second Periodontal Week of Rio Plata, Montevideo, Uruguay, October 12-18, 1980. Contact: Secretaria, Avda. Liberador Brigadier Gral. Lacalleja 1464-Piso 13, Montevideo, Uruguay.

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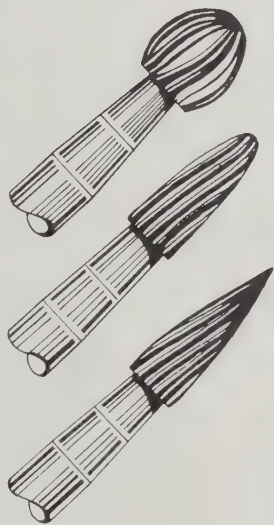
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ONTARIO — Exceptional opportunity to purchase a fine preventive family practice well-established with high earnings and excellent personnel. 45 minutes north of Toronto in farming community with drawing area of 10,000. Two modern equipped operatories with third partially set up. Reply to CDA Box Number 1925.

ONTARIO — Very busy practice for sale, located in a beautiful, year round recreational area, 110 miles east of Toronto. Hospital privileges available. Yearly gross: \$160,000+ based on 32-hour week. Price: \$39,000. Available September 1980. Reply to CDA Box Number 1980.

ONTARIO — Midland. Large general practice for sale due to ill health. Contact: G. Teskey, 361 King Street, Midland, Ont. L4R 3K7. Phone: (705) 526-7886.

ONTARIO — Ottawa. Well established primarily adult practice. Two fully equipped operatories, Dental-Eze and Ritter Vega chairs. Central location, air conditioned building approx. 600 sq. ft. Rent is reasonable with good gross income and low overhead. Reply to CDA Box Number 1992.

DALHOUSIE UNIVERSITY

FACULTY POSITION AVAILABLE

School of Dental Hygiene

Position: Instructor of Dental Hygiene —
Half Time

Description: Responsibilities include clinical supervision of dental hygiene students in extramural assignments as well as some clinical instructions within the dental school. Some didactic and laboratory instruction may also be included. In addition, faculty members are expected to be involved in committees and continuing education and to participate in program planning.

Qualifications: R.D.H. with a Baccalaureate degree and experience in public health and/or private practice.

Employment Date: August 1, 1980 or when arranged

Rank and Salary: Commensurate with education and experience

Please contact: Kate MacDonald, Director, School of Dental Hygiene, Faculty of Dentistry, Dalhousie University, Halifax, Nova Scotia B3H 3J5.

SOUTHWESTERN ONTARIO — Exceptional opportunity. Excellent preventive practice at reasonable price in Woodstock (population 27,000 plus) Ont. Office is 600 sq. ft.; two operatories (10' x 10'), lab, reception area, darkroom and two piece washroom; modern modular equipment. Possibilities for expansion in future, also purchase of shares in building with good equity build up. Rent at present \$350.00 per month, includes air-conditioning and hydro. Reason for sale; going back to university for post-grad program. If interested call: Dr. O. Tucker, (519) 539-9161.

UNITED STATES — Denver, Colorado. Three operatory, well established, growing practice in suburbs. Hygienist 3-4 days per week; N20; \$110,000. Reply to: 1450 S. Havana #200, Aurora, CO 80012, U.S.A.

Associateship Available

BRITISH COLUMBIA — Vancouver. Full time associate required in four dentist suburban practice. Contact: Dr. H. Guenther, 4611 Kingsway, Burnaby, B.C. V5H 2B3. Phone: (604) 437-0728.

BRITISH COLUMBIA — Vancouver (Surrey area). Oral surgery associate with recent residency background in all phases of oral and maxillofacial

DENTISTS

\$28,728 to \$39,000
(Presently under review)
(2 Locations)

This competition is open to both male and female applicants.

DUTIES: The successful applicants will be in charge of modern 2-chair clinics and will work with experienced dental auxiliaries to provide comprehensive dental services to eligible elementary school age children. Services will be provided in each clinic utilizing the sit-down 4-handed dentistry concept. The dentist in charge of the mobile clinic can be assisted in restorative procedures by dental hygiene personnel with training in this specialty.

QUALIFICATIONS: Graduation from a school of dentistry approved by the Canadian Dental Association and possession of a license to practice dentistry in New Brunswick as issued by the New Brunswick Dental Society. The successful applicants will be covered by a comprehensive benefit package. Competence in English is essential; however, competence in both Official Languages is desirable, particularly for the Dalhousie position.

LOCATION: Department of Health
Dental Health Services
Dalhousie (fixed)
Fredericton (mobile)

Competition Number NB 80-PJ-28



NEW BRUNSWICK CIVIL SERVICE COMMISSION

Room G-15, Centennial Building
P.O. Box 6000
Fredericton, New Brunswick E3B 5H1

Petites Annonces

surgery. Future partnership possibilities in an active diverse growing practice. N.D.E.B. or ability to sit local specialty board essential. Send resume to: CDA Box Number 1977.

ALBERTA — Calgary. Associate required for group practice. Dentist whose interest lies in oral surgery or periodontics preferred. G.A. facility available. Reply to CDA Box Number 1991.

MANITOBA — Opportunity available for full-time associate in modern newly renovated office. Work in a relaxed atmosphere, providing total preventive dental care utilizing four-handed dentistry with experienced efficient staff. Salaries and fees negotiable. Good potential for future partnership or full ownership. For further information, reply to CDA Box Number 1987.

BURLINGTON, ONTARIO

Up to 5,000 sq. ft. available in Plaza which has a busy library, bank etc. Ideal for full service dental clinic. Fast growing upper income bracket. This centre is not serviced by any dentists. Would also consider sale of development.

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(416) 862-0414

OPPORTUNITY



DENTAL HEALTH CONSULTANT EDMONTON

You will be responsible for dental health consulting services to selected local health authorities throughout the provinces; and for assisting in planning and policy formulation.

Qualifications: Bachelors' degree in a related field and Diploma in Dental Hygiene. Eligible for certification by Coordinating Council of the University of Alberta. Considerable experience including Community (Public) Health experience. Equivalent combinations of education and experience may be considered. NOTE: Considerable travel involved.

Salary: \$21,792 — \$27,096 (currently under review)
Competition #8085-4 Open until suitable candidate selected.

For detailed information, request Job Bulletins and apply to:

Alberta Government Employment Office
5th Floor, Melton Building
10310 Jasper Avenue
Edmonton, Alberta
T5J 2W4

SOUTHWESTERN ONTARIO — Associate required for modern six operator practice with partnership potential; full or part-time. Reply to CDA Box Number 1959.

QUEBEC — Montreal. Ultra modern, prevention oriented practice with seven chairs, located at Queen Mary Road and Cote des Neiges, seeks associate or full or part time, to join us starting June 15th. Please phone: Mrs. Yudelton at (514) 739-8130.

QUEBEC — Sherbrooke. Periodontist needed for large, multi-specialty group practice in ultra-modern dental centre. Situated in one of the finest skiing and boating regions. An outstanding practice with no initial investment or equipment purchase is offered. Write: Box 1553, Sherbrooke, Que. J1H 5M4.

Opportunities Available

BRITISH COLUMBIA — Cassiar. Locum or associate wanted for six weeks, three months, or longer. Spectacular scenery; excellent hunting; fishing, etc. Apply to: Dr. B. Rauch, c/o Medical Dental Clinic, Cassiar, B.C. V0C 1E0.

BRITISH COLUMBIA — Nanaimo. Dental hygienist required for preventive practice in growing community on Vancouver Island. Excellent benefits. Full time position available immediately. Reply to: Dr. J. Davis, 170 Wallace Street, Nanaimo, B.C. V9R 5B1.

UNIVERSITY OF SASKATCHEWAN — College of Dentistry, Department of Restorative & Prosthetic Dentistry. A one year term appointment July 1, 1980 — June 30, 1981 is available for a person with a D.D.S. or D.M.D. and who preferably has graduate training in operative or restorative dentistry. This is a junior appointment at the rank of Lecturer. Duties include undergraduate teaching in restorative dentistry and dental materials. Send curriculum vitae to: Office of the Dean, College of Dentistry, University of Saskatchewan, Saskatoon, Sask. S7N 0W0.

UNIVERSITY OF BRITISH COLUMBIA GRADUATE PERIODONTICS

1. The Faculty of Dentistry offers two programs in graduate periodontics:
 - a) The 2-year certificate (diploma) program.
 - b) The 3-year program leading to both the certificate (diploma) in periodontics and the M.Sc. degree.
2. Applications for the program commencing in September 1981 should be submitted by 1 October, 1980.

Further information and application forms may be obtained from:

The Division of Graduate & Postgraduate Studies,
Faculty of Dentistry, 2199 Wesbrook Mall, University
of British Columbia, Vancouver, B.C. V6T 1Z7.

DENTAL RESIDENCY

The Vancouver General Hospital offers a one year General Dental Residency commencing June 15, 1980. Individuals will have an opportunity to participate in a variety of patient services including dental care to cancer patients and will be able to rotate through some surgical services and Anaesthesia. Ideal for general practice and future post graduate training. Reply to:

Dr. D.D. Gellman, Medical Administration, Vancouver General Hospital, 855 W. 12th Avenue, Vancouver, B.C. V5Z 1M9, Canada.

FOR SALE

R & R root canal reamers, 25mm length, sizes 10-80; selling boxes of 60; size 10-50 \$35.00; size 55-80 \$40.00. Contact: Dr. P. Wylan, 10318 East Rosecrans Avenue, Bellflower, CA 90706, U.S.A.

MINISTRY OF HEALTH DENTAL HYGIENISTS

Competition H80:1018-22 \$1,485 — \$1,701

The Community Health Programs, offers excellent opportunities at VARIOUS LOCATIONS for career-minded hygienists to participate in community educational, motivational and preventive pre-school and school dental programs. Duties include teaching in classrooms, conducting dental inspections, compiling statistical data, providing necessary follow-up services and performing other duties as a team leader in area concerned.

Qualifications — A recognized university diploma in dental hygiene or equivalent and preferably some experience subsequent to graduation. May be required to drive own car on expenses, or a government car.

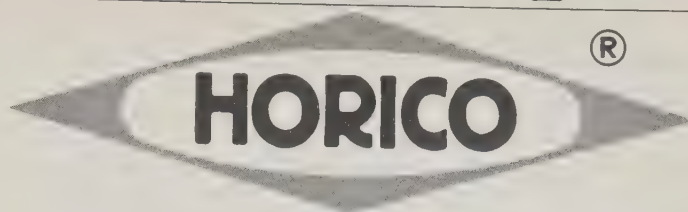
Return applications IMMEDIATELY.



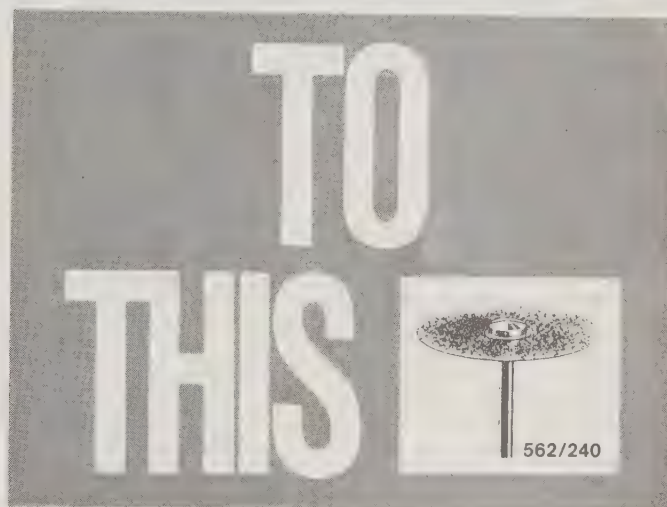
**Province of British Columbia
Public Service Commission**

Positions
are open to both
men and women.
Obtain applications from,
and return to, address below.

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**and everything
in between**

Cutting instruments that give you an edge in performance.
Write for our new 40 page catalog.



Marketplace

MANITOBA — Winnipeg. Oral surgeon certified to practise in Manitoba required for a busy practice. Object partnership. Please submit photo to CDA Box Number 1970.

ONTARIO — Toronto. Paedodontist required for busy Paedodontic practice in north Metropolitan Toronto. Opportunities available for partnership. Position available immediately. Applicant must be certified to practise in Ontario. Reply in strict confidence to CDA Box Number 1912.

QUÉBEC — Dentistes demandés. Cabinet moderne, 10 pièces. Montréal Métropolitain, près du métro. Aucune mise de fonds. Possibilité d'association. Vacances été et hiver. Avenir assuré. Traitement professionnel. Pas de dépense. Honoraires maximum selon votre capacité de travail, votre polyvalence, votre confiance personnelle. Futur assuré. Revenu assuré. Réponse postale pour rendez-vous: L'Association Dentaire Canadienne, C.P. 1981 CDA, 1815 Alta Vista Drive, Ottawa, Ont. K1G 3Y6.

The University of Washington School of Dentistry is seeking a Chairperson for the Department of Periodontics at the level of either Associate Professor or Professor effective July 1, 1980. Candidate must have proven administrative abilities, research experience and clinical expertise. This position requires the ability to administrate both a predoctoral and postdoctoral program while maintaining an active research program. The University of Washington is an equal opportunity and affirmative action employer. Qualified women and minority group members are especially

encouraged to apply. Send curriculum vitae and supporting data to: Dr. Donald R. Joondeph, Chairman, Search Committee for Chairperson of the Department of Periodontics, Department of Orthodontics SM-46, University of Washington, Seattle, WA 98195.

Opportunities Wanted

ENDODONTIST — With two years general practice experience. Completing U.S. postgraduate certificate program, May 1981, seeks opportunity for associateship leading to partnership with another endodontist. Will also consider purchase of practice or partnership in specialty group practice. All enquiries welcome. Contact: Dr. Rob Munce, 576 Wigard Avenue, Philadelphia, PA 19128. Phone: (215) 482-2690.

Miscellaneous

FOR SALE: Dispersalloy. 340 Troy ounces regular pellet, six grains each. Three years old. Regular cost less 20%. Reply to: Dr. Barrie Bourne, Box 1108, Rocky Mountain House, Alta. T0M 1T0. Phone: (403) 845-2795 after 6.00 p.m.

EQUITY PARTICIPATION — Unique opportunity for maximum profit of investment capital. Phenomenal financial capabilities strongly balanced by fixed assets. No fees or handling charges. Contact: Sequel, P.O. Box 3021, Postal Station D, Ottawa, Ont. K1P 6H6, or call: (613) 521-5775 or 236-3655.

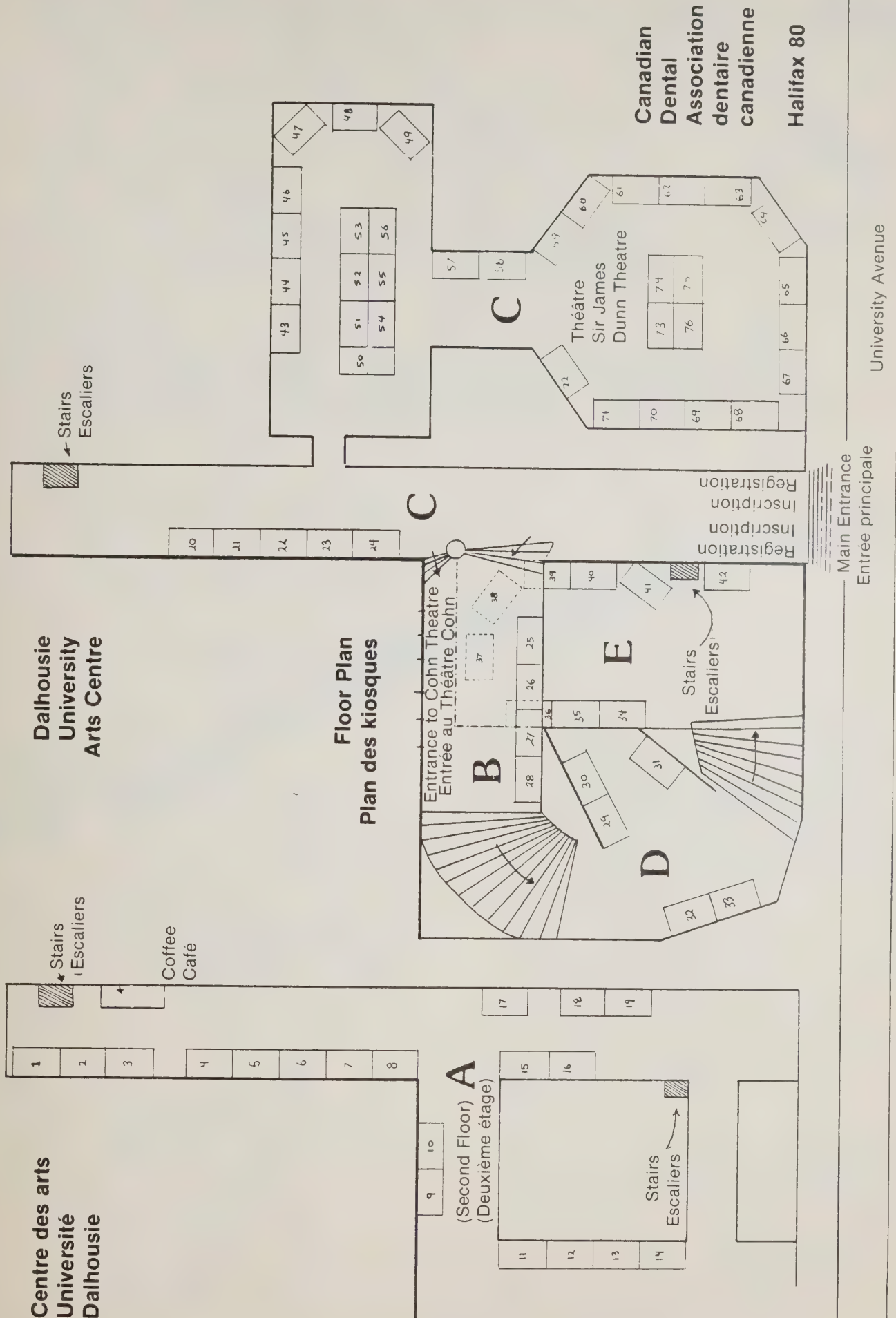
Exhibitors' Booths & Numbers

Liste des exposants et numéros de kiosques

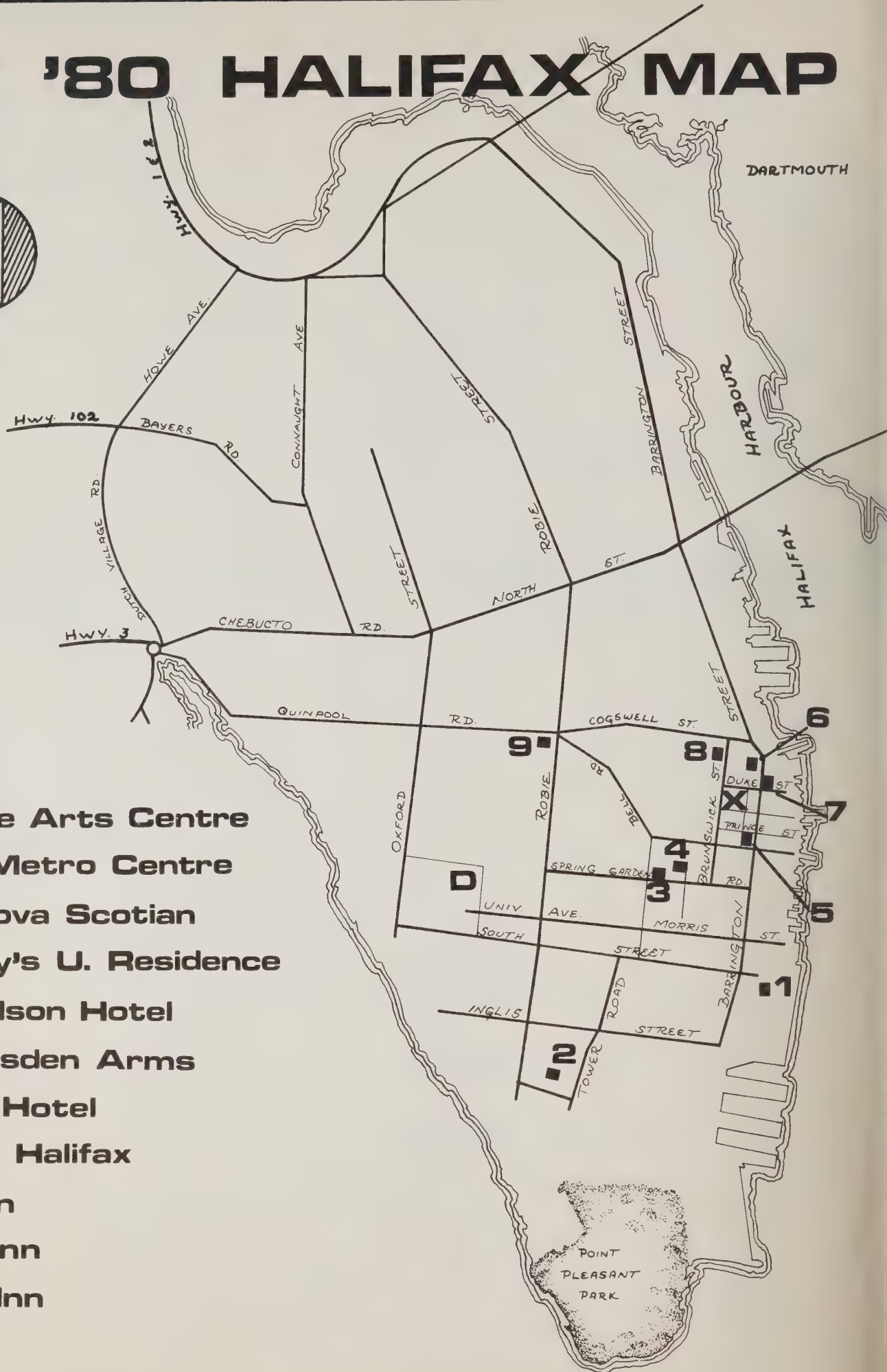
49	Cook-Waite/Greene Dental Products, Aurora, Ontario L4G 3H6	12, 13	Procter & Gamble Inc., 2 St. Clair Avenue West, Toronto, Ontario M5W 1C5	4	Lever Detergents Limited, 1 Sunlight Park Road, Toronto, Ontario M4M 1B6	50, 51	John O. Butler Company, 9715 Côte de Liesse Road, Dorval, P.Q. H9P 1A3
43	Ash Temple Limited, 31 Scarsdale Road, Don Mills, Ontario M3B 2R2	19	Johnson & Johnson Limited, 2155 Pie IX Blvd., Montreal, Quebec H1V 2E4	15	Rocky Mountain Orthodontics Canada Limited, 11 Progress Ave., Unit 5, Scarborough, Ontario M1P 4S7	28	Internat Services Inc., 18718 88th Avenue West, Edmonds, WA 98020
47	Dent-art Ltd., 3765 Chesswood Drive, Downsview, Ontario M3J 2P6	18	Philips Electronics Ltd., 601 Milner Avenue, Scarborough, Ontario M1B 1M8	57	Inter-Unitek Canada Ltd., 1744 Midland Ave., Scarborough, Ontario M1P 3C2	44	Sybron/Kerr Canada, 1991 Leslie Street, Don Mills, Ontario M3B 2M3
42, 42A	Professional Video Seminars Inc., Post Office Box 91, Station T, Toronto, Ontario M6B 3Z9	11	The Wm. S. Merrell Company, 2 Norelco Drive, Weston, Ontario M9L 1R9	17	Fraser Harlake (formerly Fraser Sweetman, Inc.), 145 Mid County Drive, Orchard Park, New York, U.S.A. 14127	32, 33	Ellman Dental Mfg. Co., Ellman Bldg. 1135 Railroad Ave., Hewlett, New York 11557 U.S.A.
76	Shofu Dental Corporation, 137 Horner Avenue, Toronto, Ontario M8Z 4Y1	16	W.B. Saunders Company Canada Ltd., 1 Goldthorne Avenue, Toronto, Ontario M8Z 5T9	9, 10	A-dec, Inc., 2601 Crestview Drive, Newberg, OR, U.S.A. 97132	40	Covington Computer Systems Corp., 970 Montée De Liesse, Suite 201, Ville St. Laurent, Quebec H4T 1W7
20, 21, 22	Den-tal-ez Mfg. Co., 3050 St. Charles Boul., Kirkland, Quebec H9H 3B7	78	C&B Dental Lab. Inc., 2197 Gerrard St. E., Toronto, Ontario M4E 2C6	23, 24	Dental Depot (Canada) Ltd., 7060 Hutchison, Montreal, Quebec H3N 1Y7	67	Denar Corp., 901 E. Cerritos Ave., Anaheim, CA U.S.A. 92805
34	Lux & Zwingenberger Ltd., 609 King Street West, Toronto, Ontario M5V 1M5	54	J.F. Jelenko & Co., 170 Petersville Road, New Rochelle, New York 10801 U.S.A.	74	Astra Pharmaceuticals Canada Ltd., 1004 Middlegate Road, Mississauga, Ontario L4Y 1M4	31	Hoyt Laboratories, 633 Highland Ave., Needham, Mass. U.S.A. 02194
5	Chayes Virginia Inc., 8233 Baumgart Road, Evansville, Indiana, U.S.A. 4711	71, 72	Warner Lambert Canada Ltd., 2200 Eglinton Ave. E., Toronto, Ontario M1K 5C9	73	Medi-Dent-Service (Div. of Citicorp Leasing Canada Ltd.), 5050 S. Service Road, Burlington, Ontario L7L 4Y7	35	Inter-Dent, 391 Steelcase Road, West, Unit 16 Markham, Ontario L3R 3V9
25	Reed Stenhouse Associates Limited, P.O. Box 279, Toronto Dominion Centre, Toronto, Ontario M5K 1J5	48	Professional Pharmaceutical Corp., 2795 Bates Road, Montreal, Quebec H3S 1B6	29, 30	Colgate-Palmolive Canada, 64 Colgate Ave., Toronto, Ontario M4M 1N7	56	Larr Sales Ltd., 525 Milner Ave., Scarborough, Ontario M1B 2K4
75	Teledyne Water Pik Ltd., Miss D. Shork 82 Carrier Dr. Rexdale, Ontario M9W 5R1	59, 60	The Group at Cox, 333 Arvin Avenue, Stoney Creek, Ontario L8E 2M7	63, 64	Star Dental/A Syntex Dental Company, P.O. Box 896, Valley Forge, PA 19482	41	Takara Company Ltd., 2076 South Sheridan Way, Mississauga, Ontario L5J 2M4
7	Block Drug Company (Canada) Ltd., 36 Northline Road, Toronto, Ontario M4B 3E3	8	S.S. White Dental Division, Pennwalt of Canada Limited, 50 Paxman Road, Unit 3, Etobicoke, Ontario M9C 1B7	58	Mardan Business Systems Ltd., 48 Preston Street, Kitchener, Ontario N2G 3W4	52	Take III Investments Inc., 46 Elgin Street, Suite 45 Ottawa, Ontario K1P 5K6
65	3M Canada Inc., P.O. Box 5757, London, Ontario N6A 4T1	68, 69, 70	Dentsply Canada Limited, 172 John Street, Toronto, Ontario M5T 1X5	45, 46	The L.D. Caulk Co. of Canada, 172 John Street, Toronto, Ontario M5T 1X5	55	Tri Hawk International, 8230 Mayrand St., Suite 100 Montreal, Quebec H4P 2C6
6	Frank W. Horner Inc., 5485 Ferrier Street, Montreal, Quebec H4N 1P7	61, 62	The Pelton & Crane Co., 200 Clanton Road, P.O. Box 3664, Charlotte, NC 28203	27	Unident Limited, P.O. Box 8540, Station A, Halifax, N.S. B3K 5M2	66	The Upjohn Company of Canada, 865 York Mills Road, Don Mills, Ontario M3B 1Y6
14	Shaw Laboratories Limited, 104 Bond Street, Toronto, Ontario M5B 1X9	53	Cooper Laboratories, 670 Curi Borvin, Boisbriand, P.Q. T7G 2A7	26	Canadian Associated Laboratories Ltd., P.O. Box 8540, Station A, Halifax, N.S. B3K 5M2	77	American Midwest, 901 W. Oakton, Des Plaines ILL 60018 (Suzie Regnell)

Editor's Note: Booth numbers subject to last minute changes.

Halifax 1980



CDA '80 HALIFAX MAP

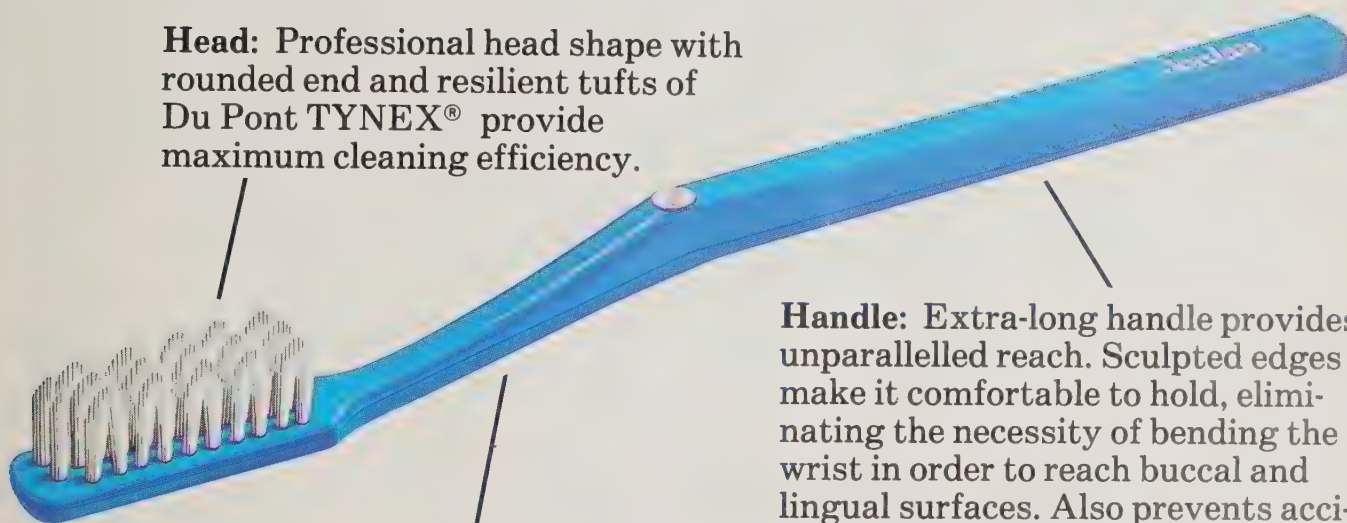


- D Dalhousie Arts Centre**
- X Halifax Metro Centre**
- 1 Hotel Nova Scotian**
- 2 St. Mary's U. Residence**
- 3 Lord Nelson Hotel**
- 4 The Dresden Arms**
- 5 Carlton Hotel**
- 6 Chateau Halifax**
- 7 Delta Inn**
- 8 Citadel Inn**
- 9 Holiday Inn**

New

The Jordan Toothbrush

Head: Professional head shape with rounded end and resilient tufts of Du Pont TYNEX® provide maximum cleaning efficiency.



Handle: Extra-long handle provides unparalleled reach. Sculpted edges make it comfortable to hold, eliminating the necessity of bending the wrist in order to reach buccal and lingual surfaces. Also prevents accidental tipping or rotating of brush.

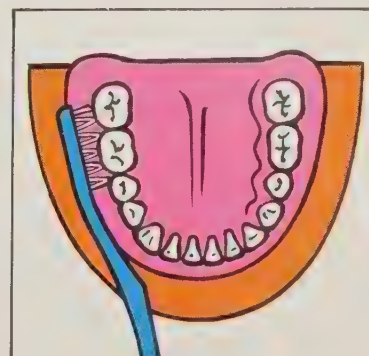
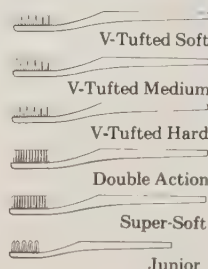
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Unique "spoon" silhouette puts tuft ends on the same level as the handle, providing balance and control when brush is pressed against teeth.



Designed to reach where other brushes can't.

Choice of design.





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Give your patients Trident Sugarless Gum.

Trident Sugarless Gum can be a worthwhile aid in your dental program for patients who chew gum. Many dentists recognize this, and recommend Trident whenever they get the opportunity.

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